Service Manual

ViewSonic 15GS-3

Model No. 1569GS-3

15" Digital Controlled Color Monitor
Graphics Series

(Rev. 1 - July 1996)

ViewSonic® 20480 E. Business Parkway, Walnut, California 91789 USA - (800) 888-8583

SERVICE WARNING

TO PREVENT RISK OF AN ELECTRIC HAZARD, TEST BEFORE TOUCHING. Where, after operation of the fuse in the live side of the main power supply, some components of the equipment that remain under voltage might represent a hazard during servicing.

GENERAL INFORMATION

1. OUTLINE

This is a 15" (14.0"/35.6 cm) multi-scaning color CRT display with the following nice features. OSD (on screen display) Control is newly introduced, which allows easy user's adjustment. Power saving function which helps saving energy is also one of the highlights of this model.

2. FEATURES

2.1 Power saving

- Built in Power Saving function based on VESA-DPMS proposal.
- Power energy of the circuit shall be saved according to the power saving signal from computer.

2.2 OSD function

- OSD (on screen display) function is new and excellent man-machine interface.
- Anyone is able to set up the picture as he wants throuth OSD menu.
- English language is available, (5 coutrie's language is optional).

2.3 Self-Test function

Self testing picture is came out by pushing [1] -key in the case that signal cable is not connected to the computer or power saving is out of operation.
This function shows monitor is alive or not and can be used for self-again test.

2.4 Ergonomics design

- Low emission design to meet with MPRII .
- ESF (Electro static field) free coating on CRT.
- TCO'92 and CE mark.

2.5 Multi scan with digital technology

- 8 bit's micro-computer controls the circuit's operation to meet with wide range signal of fH= 30~69 KHz and fV= 50~160 Hz. So VGA640× 350, VGA 640× 400, VGA640× 480, SVGA800× 600 and 1024× 768 modes are applicable.

2.6 1 Factory's preset modes, 13 user's memory-modes

- 1 standard modes are preset at factory.
- 7 modes are reserved at the factory.
- 13 user's memory-modes are available to set the user's own timing and information to the display.

2.7 Flat face and fine dot pitch

Flat face CRT with 0.28 mm fine dot pitch gives the comfortable sight of the screen.

2.8 Superior display performance

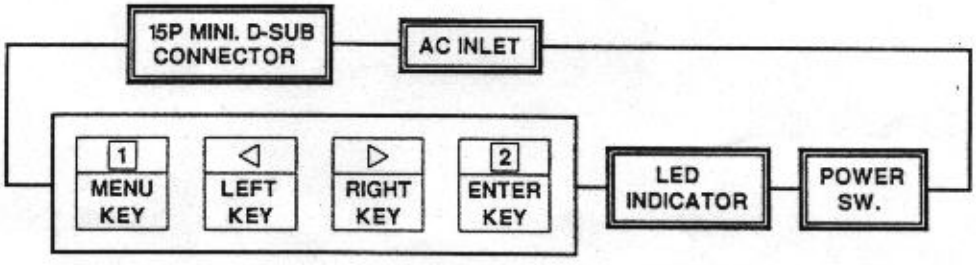
- High brightness.
- Minimized distortion by correction circuit.
- User's enjoy full scan image for graphics.

Plug & play

VESA DDC1/2B (display date channel) is compatible.

SPECIFICATION

DIAGRAM



1.1 POWER SW., LED, [1] -key (MENU), ◁-key (LEFT), ▷-key (RIGHT), and [2] -key(ENTER) are located on the front panel.

1.2 Signal cable and AC inlet are located on the back side of the cabinet.

1.3 OSD menu includes the following function.
CONTRAST, BRIGHTNESS, H/V SIZE, H/V POSITION, PINCUSHION, TRAPEZOID, PARALLELOGRAM, COLOR SELECT, USER COLOR, VIDEO INPUT LEVEL, DISPLAY FREQUENCY, RECALL

※) CONTRAST can be directly controlled with ◁/▷-key.

※) With sync. signal, OSD menu appears by pushing [1] -key.
Without sync. signal, self test menu appears by pushing [1] -key.

※) 5 Language with OSD is optional.

2. MECHANICAL SPECIFICATIONS

..... refer to the attached drawing

2.1 Dimensions

Height: : 15.0 in. (380 mm)
Width: : 14.6 in (372 mm)
Depth: : 16.2 in (412 mm)

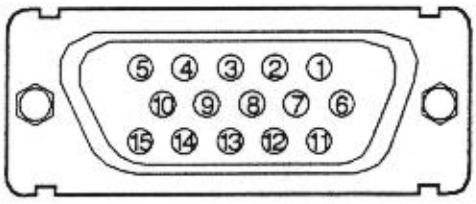
2.2 Net Weight: : 13.0 kg (28.6 lbs)

3. CONNECTORS

3.1 Signal cable: 15pin Mini. D-Sub

3.2 AC Inlet: CE 22 typed connector

15P Mini D-Sub Pin assignment



1... RED	6... GROUND	11... GROUND
2... GREEN	7... GROUND	12... SDA(DOC)
3... BLUE	8... GROUND	13... H.SYNC
4... GROUND	9... ---(OPEN)	14... V.CLK/V.SYNC
5... —(OPEN)	10... GROUND	15... SCL(DOC)

4. CRT SPECIFICATIONS

Part No.	M36KUT23XX
Type	15", 90°, 29φ, in-line gun
Dot Pitch	0.28 mm
Phosphor	R, G, B Medium Short Persistence
Bulb	SEMI-TINT
Face	AGAS Coating
Total Trans-mission	57.2%

5. ELECTRICAL SPECIFICATIONS

5.1 Standards conditions...Except special items

Display image	Green, full"H" characters with a border line. (7× 9 dots) Video Signal: 100% duty
Video signal level	0.7 Vpp
Contrast, Brightness	Contrast: Max, Brightness: Raster Just cut off
Ambient Temperature	20± 5℃ (68± 9℉)
Input voltage	AC 120 V, 60 Hz
Terrestrial magnetism	Vertical field: Northern hemisphere field 1569GS-3M/3E: 45 uT, -3A: -45 uT, Horizontal field: no field
Viewing direction	Parallel to the CRT axis
Measurements	After an initial warming up time of more than 30 minutes
Ambient light	200± 50 lux
Display mode	800× 600 / 75Hz

5.2 Power supply...Commercial power source

Input voltage	AC 90 - 264 V
Power frequency	50/60 Hz (± 3 Hz)
Input current	2.0 A (Typ.) at AC 100V
Inrush current (at 20℃)	46 Ao-p (Max.)
Power consumption	95W Typ./<30W stand by

5.3 Acceptable timing

- If your timing is within the following specification, this CRT display can be performed automatically with certain size and position.

Horizontal Sync frequency: 30.0 ~ 69.0 kHz
Blanking Time:≧ 4.0 uS
Back Proch:≧ 1.25 uS
Front Proch:≦ Back Proch
Sync Width:≧ 1.2 uS

Vertical Sync frequency: 50.0 ~ 160.0 Hz
Blanking Time:≧ 0.5 mS
Back Proch:≧ 0.4 mS
Sync Width:≧ 0.045 mS

- In case of size and/or position is not appropriated, please adjust it as you like through OSD menu. And if you want to keep it (size and position), please push the key for menory.
  Please notice, however, that there is a case you can not get the size and/or position which you want, for example, the "Display Time" is too short for you get bigger size of the image.

5.4 Video signal level

This CRT display is adjusted at the factory using 0.7 Vp-p Video Signal, Black level is 0V.

5.4.1 Sync signal level

- H/V Separate, H/V Mixed: TTL level
- Sync on Green: 0.286 Vpp

5.4.2 Input impedance

- Video input: 75Ω
- Sync input:≧ 1kΩ

5.5 Standard timing

TIMING CHART

A	Period
B	Blanking
C	Sync Width
D	Back Porch
E	Active
F	Front Porch

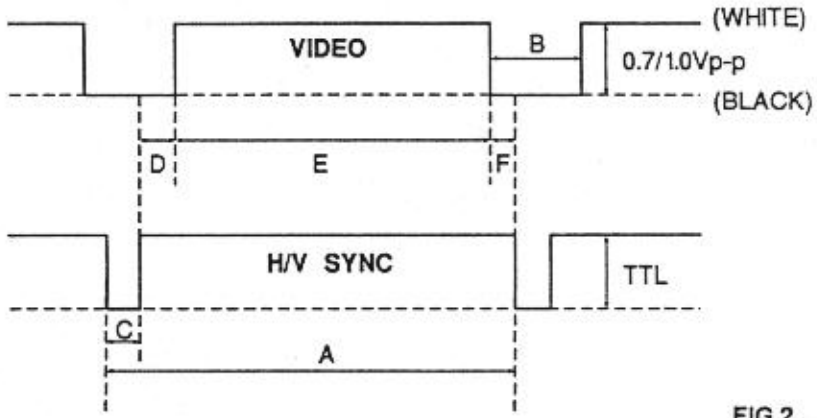


FIG.2

		PRESET	RESERVATION		
DOT CLOCK		MODE-43	MODE-3	MODE-58A	MODE-56
		78.750 MHz	25.175 MHz	57.283 MHz	31.500 MHz
HORIZ	fH	60.02 KHz	31.47 KHz	49.725 KHz	37.50 KHz
	A-Period	16.660 us (1312 dots)	31.778 us (800 dots)	20.111 us (1152 dots)	26.667 us (840 dots)
	B-Blanking	3.657 us (288 dots)	6.356 us (160 dots)	5.587 us (320 dots)	6.349 us (200 dots)
	C-Sync width	1.219 us (96 dots)	3.813 us (96 dots)	1.117 us (64 dots)	2.032 us (64 dots)
	D-Back porch	2.235 us (176 dots)	1.907 us (48 dots)	3.910 us (224 dots)	3.810 us (120 dots)
	E-Active time	13.003 us (1024 dots)	25.423 us (640 dots)	14.524 us (832 dots)	20.317 us (640 dots)
	F-Front porch	0.203 us (16 dots)	0.636 us (16 dots)	0.559 us (32 dots)	0.508 us (16 dots)
VERT	fV	75.03 Hz	59.94 Hz	74.55 Hz	75.00 Hz
	A-Period	13.328 ms (800 lines)	16.684 ms (525 lines)	13.414 ms (667 lines)	13.333 ms (500 lines)
	B-Blanking	0.533 ms (32 lines)	1.430 ms (45 lines)	0.865 ms (43 lines)	0.533 ms (20 lines)
	C-Sync width	0.050 ms (3 lines)	0.064 ms (2 lines)	0.060 ms (3 lines)	0.080 ms (3 lines)
	D-Back porch	0.466 ms (28 lines)	1.049 ms (33 lines)	0.784 ms (39 lines)	0.427 ms (16 lines)
	E-Active time	12.795 ms (768 lines)	15.254 ms (480 lines)	12.549 ms (624 lines)	12.800 ms (480 lines)
	F-Front porch	0.017 ms (1 lines)	0.318 ms (10 lines)	0.020 ms (1 lines)	0.027 ms (1 lines)
Sync polarity (H/V)		Positive/Positive	Negative/Negative	Negative/Negative	Negative/Negative

		RESERVATION			
DOT CLOCK		MODE-57	MODE-78	MODE-13	MODE- 44-1
		49.500 MHz	80.000 MHz	75.000 MHz	108.000 MHz
HORIZ	fH	46.88 KHz	60.24 KHz	56.48 KHz	63.98 KHz
	A-Period	21.333 us (1056 dots)	16.600 us (1328 dots)	17.707 us (1328 dots)	15.630 us (1688 dots)
	B-Blanking	5.172 us (256 dots)	3.800 us (304 dots)	4.053 us (304 dots)	3.778 us (408 dots)
	C-Sync width	1.616 us (80 dots)	1.200 us (96 dots)	1.813 us (136 dots)	1.037 us (112 dots)
	D-Back porch	3.232 us (160 dots)	2.200 us (176 dots)	1.920 us (144 dots)	2.296 us (248 dots)
	E-Active time	16.162 us (800 dots)	12.800 us (1024 dots)	13.653 us (1024 dots)	11.852 us (1280 dots)
	F-Front porch	0.323 us (16 dots)	0.400 us (32 dots)	0.320 us (24 dots)	0.444 us (48 dots)
	fV	75.00 Hz	74.93 Hz	70.07 Hz	60.020Hz
	A-Period	13.333 ms (625 lines)	13.346 ms (804 lines)	14	
Z	E-Active time	27.876 us (630 dots)	19.901 us (804 dots)	14.007 us (897 dots)	10.960 us (1024 dots)
	F-Front porch	0.620 us (14 dots)	0.600 us (24 dots)	0.600 us (38 dots)	0.410 us (39 dots)
VERT	fV	48.05 Hz	77.079Hz	105.053 Hz	165.059 Hz
	A-Period	20.815 ms (614 lines)	12.974 ms (506 lines)	9.519 ms (514 lines)	6.058 ms (424 lines)
	B-Blanking	0.814 ms (24 lines)	0.615 ms (24 lines)	0.389 ms (21 lines)	0.386 ms (27 lines)
	C-Sync width	0.102 ms (3 lines)	0.103 ms (6 lines)	0.037 ms (2 lines)	0.043 ms (3 lines)
	D-Back porch	0.712 ms (21 lines)	0.513 ms (20 lines)	0.352 ms (19 lines)	0.343 ms (24 lines)
	E-Active time	19.899 ms (587 lines)	12.239 ms (477 lines)	4.880 ms (488 lines)	5.601 ms (392 lines)
	F-Front porch	0.102 ms (3 lines)	0.128 ms (5 lines)	0.093 ms (5 lines)	0.071 ms (5 lines)
Sync polarity (H/V)		Negative/Negative	Positive/Positive	Negative/Negative	Negative/Negative

5.6 Display performance

5.6.1 Display area(preset timing)

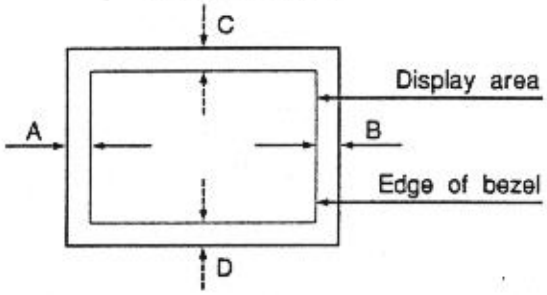
WIDTH: 260 mm (typ.)± 5 mm

HEIGHT: 195 mm (typ.)± 5 mm

5.6.2 Centering

| A-B | ≦ 5 mm

| C-D | ≦ 5 mm



5.6.3 Distortion

5.6.3. a) Trapezoid

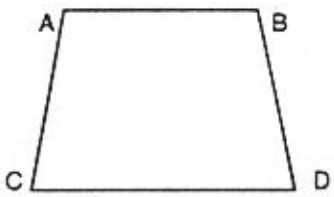
| a | , | b | ≦ 2.5 mm(factory preset)
≦ 1.5 mm(user adjustable)

| c | ≦ 3.0 mm(factory preset)

| d | ≦ 3.5 mm(factory preset)

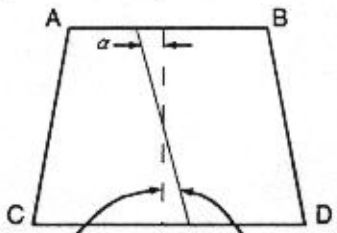
Standard condition

Preset Mode



5.6.4. b) Parallerogram

| α | < 0.83 deg.



Ture vertical line

Displayed center vertical line

5.6.5. c) Pincushion and barrel

| c1 | , | c2 | ≦ 3.0 mm(factory preset)

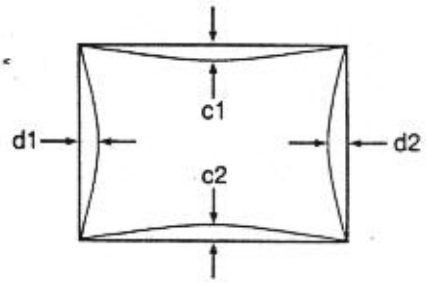
| d1 | , | d2 | ≦ 2.0 mm(factory preset)

able to transition any Pin.

from - to + (user adjustable)

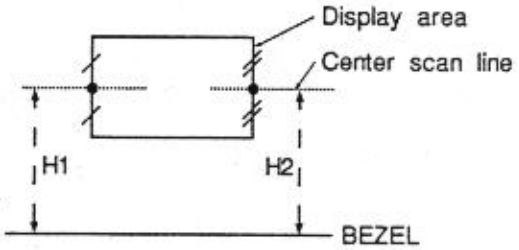
Standard condition

Preset Mode



5.6.6 Rotation

| H1-H2 | ≦ 2.5 mm



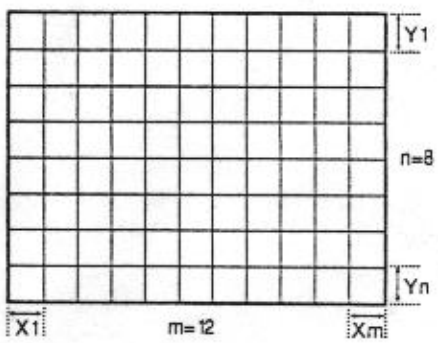
5.6.7 Linearity

Horizontal linearity

$$= \frac{X\ max. - X\ min.}{X\ max. + X\ min.} \times 100\% \leqq 7\%$$

Vertical linearity

$$= \frac{Y\ max. - Y\ min.}{Y\ max. + Y\ min.} \times 100\% \leqq 6\%$$



Conditions

Display image-crosshatch pattern

Maximum and minimum values should not be adjacent to each other.

X max. is maximum value among X1~Xm

X min. is minimum value among X1~Xm

Y max. is maximum value among Y1~Yn

Y min. is minimum value among Y1~Yn

6. Power Management for Power Saving

Power saving system is designed and based upon VESA DPMS (Porposal: 1.0p, Revision: 0.7p)

Power consumption and recovery time

*1 APM state	SIGNALS			MONITOR POWER CONSUMPTION	RECOVERY TIME TO ON STATE	INDICATOR
	H. Syns	V. Syns	VIDEO			
ON	*3 NORMAL	*3 NORMAL	*2 ACTIVE	*4 100 %	----------	Green
STAND-BY	No Sync or < 6 KHz	> 40 Hz	BLANK	< 30 W	< 4 s	Yellow
SUSPEND	> 10 KHz	No Sync or < 20 Hz	BLANK	< 30 W	< 4 s	Yellow
OFF	No Sync or < 6 KHz	No Sync or < 20 Hz	BLANK	< 8 W	< 20 s	Yellow

*1: APM: Advanced Power Management.
*2: Measure condition of power consumption for ON state:
— DISPLAY IMAGE: White full "H" characters with a border line (7× 9 dots)
*3: Normal: See page 5 "Acceptable timing"
*4: Power consumption is measure at AC100-240V.

The transition time from ON state to each AMP state is 5 seconds.

7. ENVIRONMENTS

7.1 Ambient temperature, humidity and altitude

	Operating	Storage and Shipment (Non-operating)
Temperature	0°C ~35°C (32~95°F)	-20°C ~60°C (-4~140°F)
Humidity	5~95%	5~95%
Altitude	3,000 m (Max.) (10,000 ft)	12,000 m (Max.) (40,000 ft)

*Non-condensation

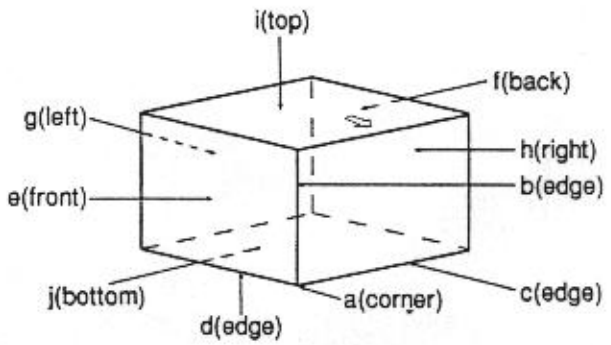
7.2 Vibration and shock

(1) Vibration

	Order of tests	Direction of Vibration		Acceleration		Frequency	Sweep	Test time
				Non-Operation	Storage and shipment			
Packed	1	Vertical	Up to Down		12.3 m/s² (1.25 G)	5~55 Hz	120 S	60 min.
	2	Horizontal	Front to back		7.4 m/s² (0.75 G)			60 min.
	3		Right to left		(1G=9.80665 m/s²)			

(2) Shock (Drop test)

Unpacked	20 G One time for each face (6 faces) (non-operation)			
Packed	Order of drop	Face to drop is to face the floor. (see the figure)	Height	Number of drop
	1	a, b, c, d	60 cm	1 time for each
	2	e, f, g, h, i, j	60 cm	



8. REGULATORY STANDARDS

8.1 Safety standards, Applicable standards

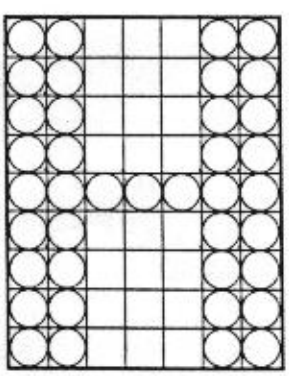
UL, FCC-B, CSA, DOC-B, DHHS, GS (TUV), HWC
TCO-92, CE
----Shell be meet with
MPR-II (TUV), PTB (SELF DECLARTION),
BZT-B, IS09241-3 (TUV)<OPTIONAL>

8.2 EMC standards

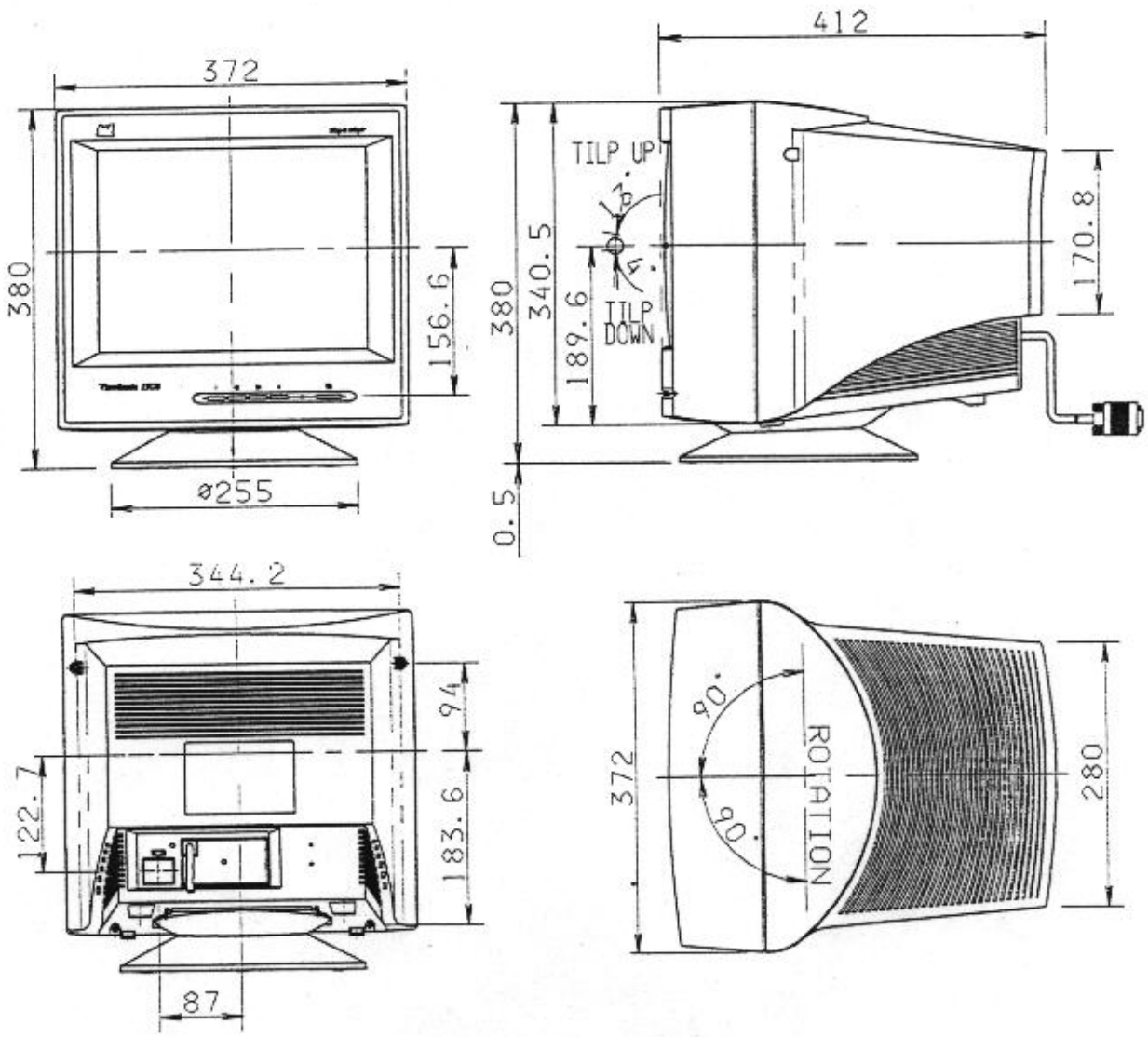
Designed to meet the following standards
FCC part 15, Subparts b, class B
BZT class B (Vfg 243/1991), MPR-II Radiation
(TUV MPR-II MARK), TCO-92

<EMI test pattern>

White, full "H" characters (7× 9 dots), block (8× 16 dots) "H" character font is as follows:

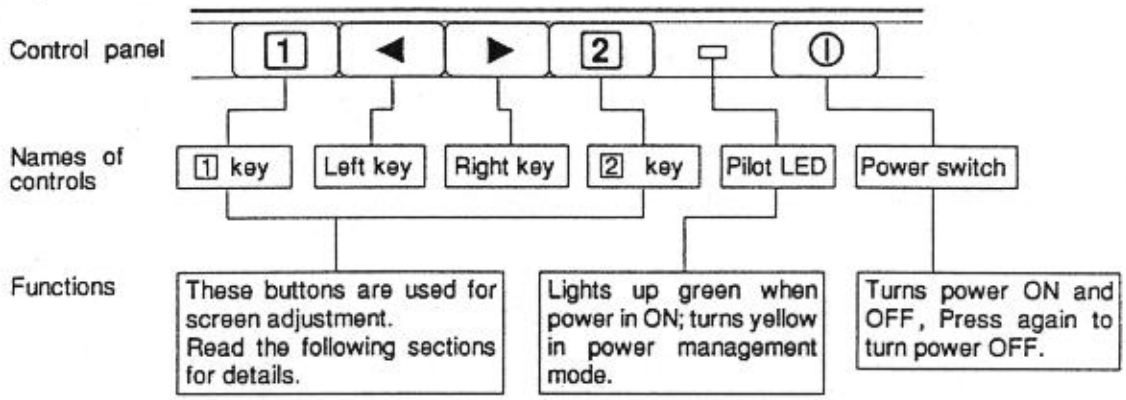


DIMENSIONS

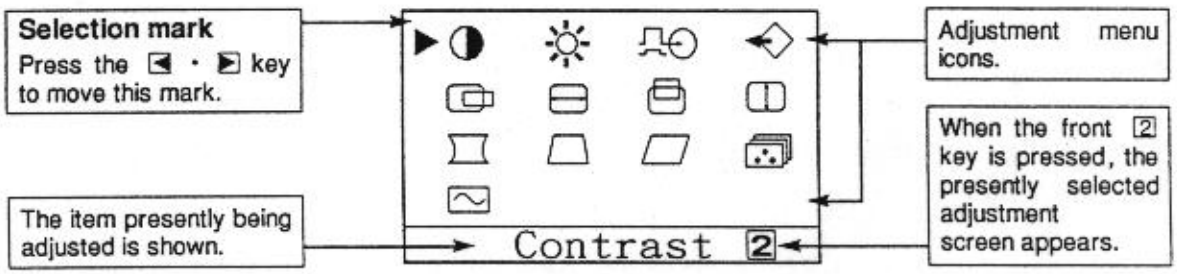

372
380
156.6
ø255
412
TILP UP
15°
0°
TILP DOWN
380
340.5
189.6
170.8
0.5
344.2
94
122.7
183.6
87
372
90°
90°
ROTATION
280

CONTROL LOCATION

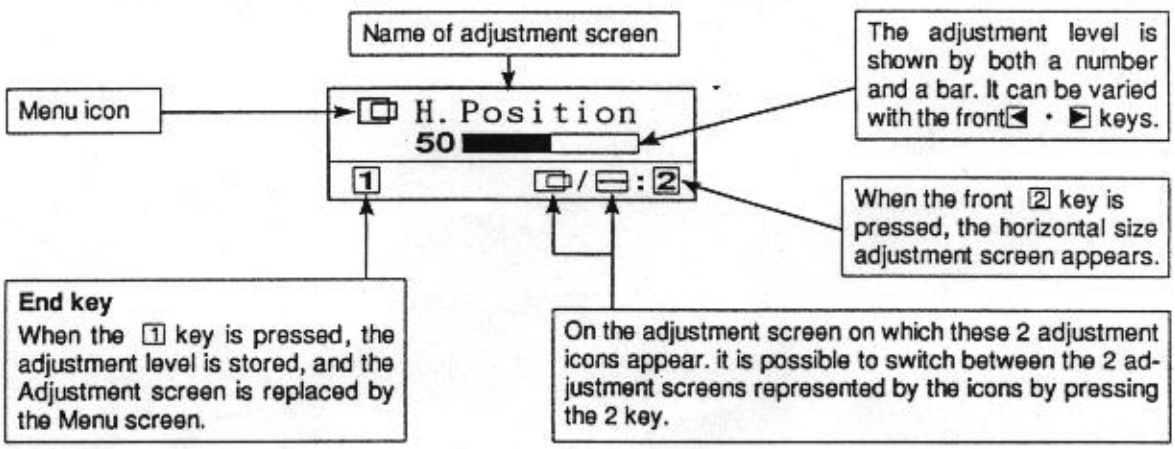
Basic operation of parts



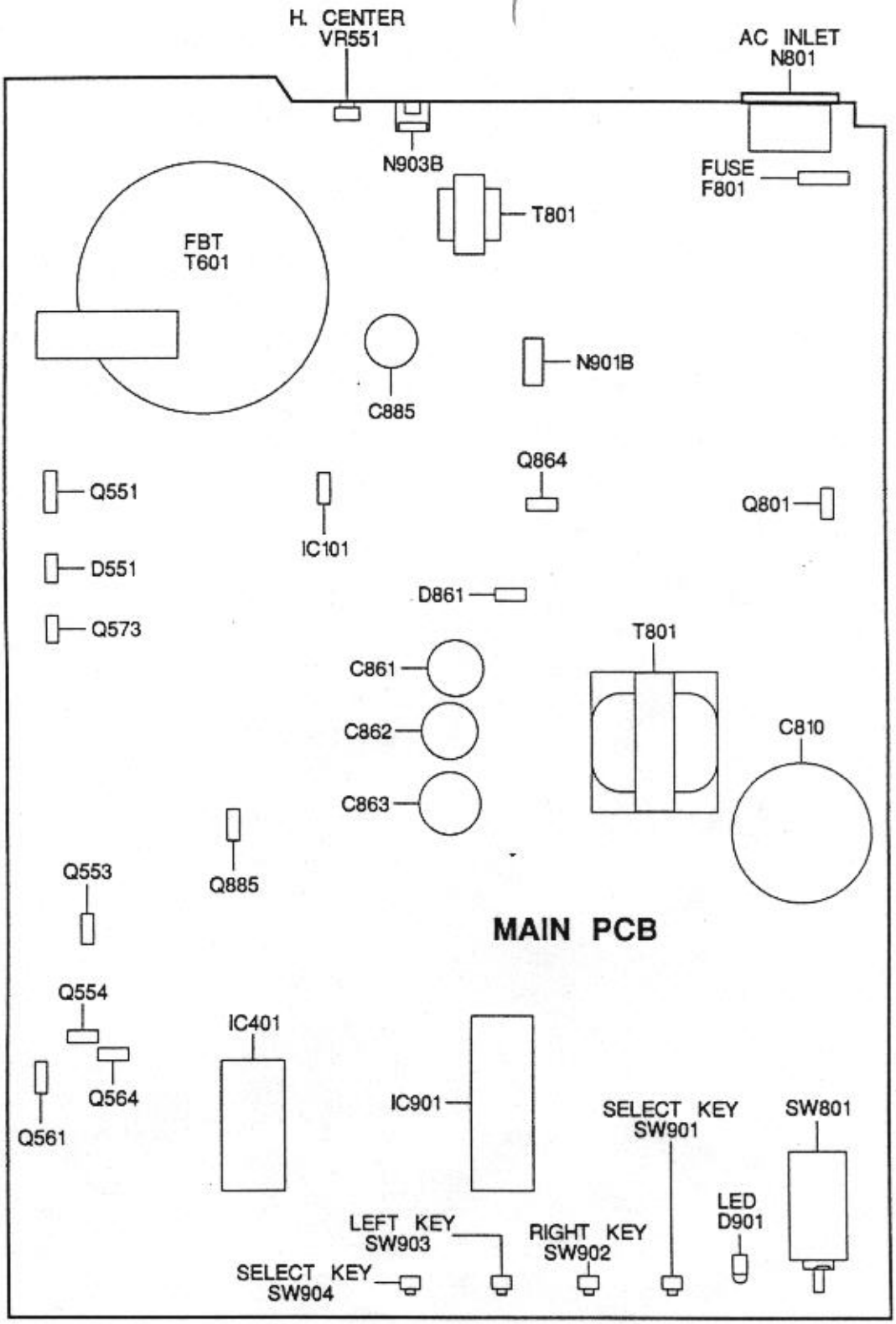
1) Menu screen



2) Adjustment screen (example: horizontal position adjustment)



SERVICE ADJUSTMENT CONTROL LOCATION



CAUTION FOR ADJUSTMENT AND REPAIR

1. Degaussing is inevitably required during purity or convergence adjustments.
2. If you check or adjust electrical specification or function, a minimum of 20 minutes burn-in is required.
3. Reforming of the leadwire is required after your repair work.
4. Prior to starting work, be sure to check that the input signal is at the specified timing and that the polarity is as specified in all modes.
5. Brightness control: After mounting the rear cover, brightness tend to decrease about 5 cd/㎡ on a flat white field and about 1 cd/㎡ on a white raster field. This should be taken into consideration.
6. Brightness stabilizing time: It takes about 20 to 50 seconds for the brightness to stabilize after turning the power off for 5 seconds (AC).
7. Aging should be performed in white raster of 30~50 cd/㎡ and raster size of 280 × 210 mm before adjusting the ITC.
8. Contrast: When both CONTRAST switches (UP and DOWN SW) are simultaneously presed, the contrast increases to a maximum.
9. Brightness: When both BRIGHT switches (UP and DOWNSW) are simultnaneously pressed, the brightness lights at the center point.

CAUTION FOR SERVICING

When servicing or replacing the CRT, high voltage sometimes remains on the anode. Completely discharge high voltage before servicing or replacing the CRT to prevent a shock hazard.

CRT Anode Discharge

1. When you check the CRT anode or replace the CRT, discharge the CRT anode to the external conductive coating (aquadag) of the CRT, especially when checking directly right after power turn-off.
2. Ground one end of a jumper wire that has a 100 M Ω resistor (30 kV < resisting pressure 100MΩ) and connect the other end to the CRT anode.

   NOTE: *Grounding must be done first.*

Power Supply

This model has a section that does not share a common ground with the power supply section. The different sections are referred to as the HOT section and the COLD section in the precautions below.

1. Do not touch the HOT section and the COLD section at the same time. You may receive an electric shock.
2. Do not short the HOT section to the COLD section. This could blow the fuse or damage parts.
3. Never measure the HOT section and COLD section at the same time when using tools such as oscilloscopes or multimeters.
4. Always unplug the unit before beginning any operation such as removing the chassis.

ADJUSTMENT AND CHECK PROCEDURE

INTRODUCTION

- This monitor is controlled by microcomputer. With the exception of purity/convergence/focus all is digitally adjusted.
  Therefor a computer, the dedicated control software, the dedicated interface, a 9~12V power supply, and a signal generator are required servicing.

TOOLS REQUIRED

- **Computer**

  The control software is IBM PC compatible only. Therefor, it is not compatible with any other operating systems.

- **Control Software**

  The 15GS-3 chassis can only use "15GS-3" adjustment program disk" No other program can access the EEPROM on the monitor.

- **Interface**

  The interface is dedicated to work only with the control software and the 15GS-3 chassis. There are no substitutes for this interface.

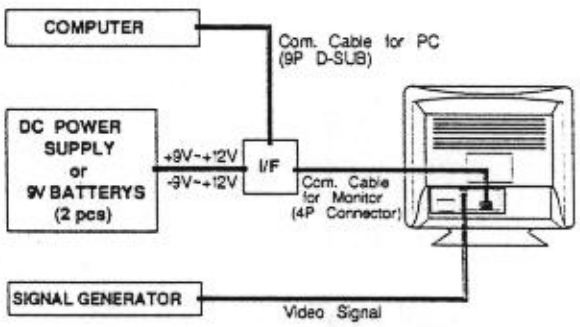
- **Power Supply**

  A DC 9~12V (+9~12V/-9~12V) power supply is required for operating the interface.

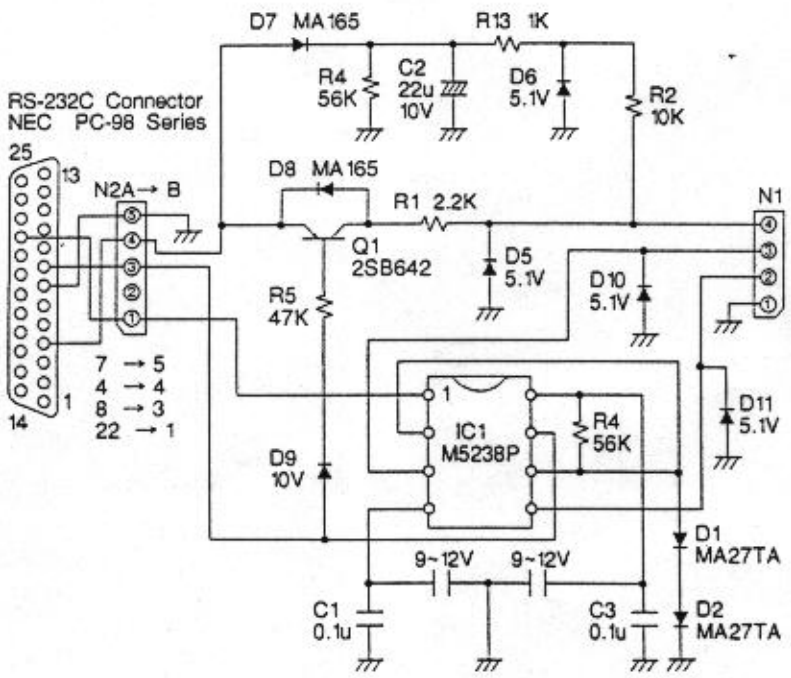
- **Signal Generator**

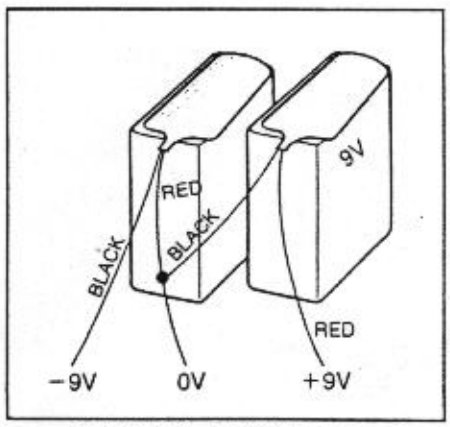
  It is necessary for you to use a signal generator which operates on fH=69 KHz, fV=160 Hz, and fc 86 MHz bands.

INTERFACE CONNECTION



INTERFACE SCHEMATIC DIAGRAM





BATTERY CONNECTION

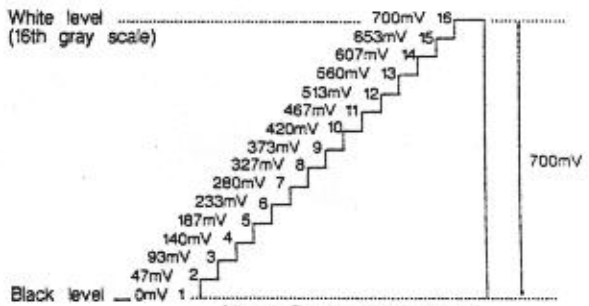
OTHER TOOLS

- Oscilloscope (dual trace)
- Scope probe - Attenuation: 100:1
  Attenuation: 10:1
- Digital Voltmeter - Range: 0 to 1000V DC
  Accuracy: 0.1%
- TV color Anyalyzer II - that reads luminance and chromaticity X and Y coordinates.
- Digital High Voltmeter
- AC power supply - Output voltage: 0 to 300V
- Degaussing coil
- Convergance meter
- Scale
- Dauble-faced scale
- Microscope - Scale factor: 50
- Screwdriver - Tip width: 1/10" (2.5 mm)
  One with extremely narrow tip-end
  Length: 6" (15 cm)
- Screwdriver - Cross recessed head
  Length: 14" (35 cm)
- Tool-for hexagon socket set screw of Deflection Yoke
- White lacquer (Paint)

STANDARD CONDITION OF ADJUSTMENT PROCEDURE

- Signal timing: Standard timing 1024× 768 (See page 5)
- Display pattern: White, full "H" character
- Signal level: V/H: TTL level video: 700mV
- Input source: AC 120/220V, 50/60 Hz
- Ambient temperature: Room temperature
- Warm-up time: More than 30 minutes
- Brightness control: Center
- Contrast control: Max.
- Magnetic field: Vertical: GS-3M/3E: 45 uT
  GS-3A -45 uT
  Horizontal: 0 uT
- Signal cable: Attached

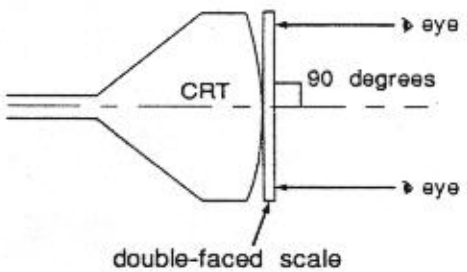
Video input signal from PC.



Note: Setup level is 0V.

- Use a Helmholtz device to adjust a unit with no horizontal magnetic field and a vertical field of 45/-45 uT. Inspect the unit under the same conditions.
- The ambient illuminance must be 200 lux.
- Use an external degaussing coil any time the
- DEGAUSS switch does not remove color shanding.

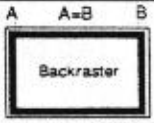
To check the image width, height, linearity and distortion, proceed as below.



Measure level with respect to tube axis.

ADJUSTMENT PROCEDURE WITH COMPUTER

1. Description of Adjustment Method

	Item Program Menu	◇ Test Meter ▼ Test Point ☐ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
A	DATA SETTING 1) Load data from FILE		A1 A2 A3 A4	OFF	Turn the power on, but do not connect the signal cable. Press ↵ by setting the cell to the menu at left. A message FILE -> EEPROM FILE NAME (G or Q escape) [ ]: is displayed. So, key in the **17G_V7_5.DAT** (when using the standard data) and press ↵. **Note** : To make the transferred data effective, turn the power of the monitor set off once and turn it on once again. **Only load standard data when the main board or the EEPROM is replaced.**	
B	X-RAY Protection	▼ D403"N"~GND	B1 B2 B3	1	Add 16V to the test point. The monitor will shut down. Turn OFF and then turn ON the power, the monitor will be operated normally.	
C	H+B	◇ Digital voltmeter ▼ C863(+)~GND ☐ Crosshatch	C1	1	Adjust VR801 until the 24V of test point at the right is resulted.	24.0 ⎓ 0.5V
D	H.Deflection Voltage 2) Adjust VSR setting	◇ Digital voltmeter ▼ Q551"C"~GND ☐ Video OFF	D1 D2 D3 D4 D5 D6 D7 D8 DE	 1 -2 -3 -4 -4	Set the cell to the menu at left and press the ↵. Set the cell to the adjusting mode INTP[0] and press the ↵. Check to be sure that the input signal to the monitor is [fH 29.5kHz] and [fV 48.0Hz] and press the ↵. Set the cell to H OUT B and press the ↵. Then, move the cell to the data side. Make adjustment to as shown at right using ← and →. Make registration using the ↵ after adjustment and press the E to the menu of D2. <The same as D2, D3, D4 and D5 after setting the adjusting mode/signal and adjustment. Adjusting mode INTP[1]: Input signal [fH 39.0kHz][fV 77.1Hz] Adjusting mode INTP[2]: Input signal [fH 54.0kHz][fV 105.0Hz] Adjusting mode INTP[3]: Input signal [fH 69.9kHz][fV 165.0Hz] Return to the main menu by pressing the E.	 DC=0 1100 ⎓ 10V 1120 ⎓ 10V 1160 ⎓ 10V 1180 ⎓ 10V
E	FOCUS	☐ Character pattern	E1 E2 E3	-4	Turn the FOCUS VR of the FBT to make the focus of the peripheral section optimum. (Note: This adjustment should be done by turning the VR using a screwdriver.)	
F	H.CENTER	☐ RGB OFF (Sync signal only)		-4	Adjust VR551 to get A = B	 Set the RASTER to the center with respect to the bezel. | A - B | ≦ 2 mm

Note 1: Check to be sure that the program disc name is 15GS-3 before making necessary adjustment.
Note 2: Unless otherwise specified, the monitor set state is as given at the right.
Note 3: The underlined places indicate the adjustment items on the screen of the PC.

	Item Program Menu	◇ Test Meter ▼ Test Point ☐ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
G	HV.SIZE, HV.POSI, V.PCC 4) Adjust Factory preset	☐ Crosshatch	G1 G2 G3 G4	MODE-3	Set the cell to the menu at left and press the [↵]. Check to be sure that the input signal to the monitor is [fH 60.023Hz] and [fV 75.029Hz] and Press the [↵]. Set the cell to the following items, press the [↵], and make adjustment as shown at right using the [⇤] and [⇥]. ① H.SIZE, ② V.SIZE, ③ H.POSI, ④ V.POSI, ⑤ V.PCC, ⑥ PARALLEL and ⑦ TRAPEZOID Note: H.POSI and V.SIZE should use both modes, MSB and LSB. For details, refer to the description of adjusting screen image. After adjusting① -⑦ , go to M5 using the [E] and [Y]. <Same as L2, L3 and L4 except for the input signal below.>	H.SIZE 260± 6mm V.SIZE 195± 6mm HV.POSI CENTER V.PCC best point
H	HV.SIZE, POSI, V.PCC Adjust Reservation timing	☐ Crosshatch	H1	MODE-3, 13, 78 MODE-44-1, 56, 57, 58A	<Same as G2, G3 and G4 except for the input signal below.> MODE-3, 13, 78 MODE-44-1, 56, 57, 58A	
I	BRIGHTNESS, COLOR Adjust OTHER setting 8) Special ADJUST	☐ Sync signal only (RGB OFF) ☐ 16 gradtion grayscale ☐ 10% Window pattern ☐ TV COLOR ANALYZER II	I1 I2 I3 I4 I5 I6 I7 I8 I9 I10 I11 I12 I13 I14 IE	 MODE-43 MODE-43 MODE-43	Set the CONTRAST··· MAX, BRIGHTNESS··· CENTER and COLOR··· 9300K using the OSD of the monitor set. Set the cell to the menu at left and press the [↵]. Feed the signal at left/pattern to the monitor set. Set the cell to the following items, press the [↵], and move the cell to the data side. Then, make adjustment using [⇤] and [⇥] so that the point at which the back raster of each R, G or B glitters. R.LOW LIGHT 9300K, G.LOW LIGHT 9300K and B.LOW LIGHT 9300K Adjust screen VR and adjust to the point where the back raster is off. Switch over to the pattern at left and check to be sure that the 2nd gradation vaguely glitters. Switch over to the pattern at left and bring the sensor of the analyzer to the center of the screen image. (CONTRAST MAX.) Move the cell to the following items and make adjustment as shown at right using [⇤] and [⇥]. R.SUBCONT 9300K, G.SUBCONT 9300K, and B.SUBCONT 9300K Set the CONTRAST of the monitor set to the MINI and move the cell to the following item. Then, make adjust as shown at right. R.LOW LIGHT 9300K, G.LOW LIGHT 9300K and B.LOW LIGHT 9300K Change the following data value to the same as 9300 k using the [⇤] and [⇥]. G2 6550K, R.SUBCONT 9300K, G.SUBCONT 9300K and B.SUBCONT 9300K. R.LOW LIGHT 6550K, G.LOW LIGHT 6550K and B.LOW LIGHT 6550K Press the [E] to return to the main menu. Set the cell (Special ADJUST) to the menu at left and press the [↵]. Select 3: Color ADJUST from the menu. Automatically convert with press [Y]. Press [↵] to return to N13 menu then press [E] to return to main menu.	(CONT MAX.) Y=170± 15cd/m² X=0.283± 0.020 Y=0.298± 0.020 (CONT MINI) Y=10± 5cd/m² X=0.283± 0.020 Y=0.298± 0.020

	Item Program Menu	◇ Test Meter ▼ Test Point □ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
J	ABL Adjust OTHER setting	□ Totally white pattern ◇ TV COLOR ANALYZER II	J1 J2 J3 J4 J5 JE	 MODE-43	Set the CONTRAST··· MAX, BRIGHTNESS··· MAX, COLOR··· 9300K using the OSD of the monitor set. Set the cell to the menu at left and press the ↵. Feed the signal at left and bring the sensor of the analyzer to the screen image center. Move the cell to ABL 9300K and adjust as shown at right. Change the ABL 6550K data values the same as ABL 9300k using ← and →. Press [E] to return to the main menu.	Y=120cd/m² +20/-10
K	INPUT 1.0 SETTING 8) Special ADJUST	□ Totally white pattern	K1 K2 K3 K4 K5 KE	MODE-43	Set the cell to the menu at left and press the ↵. Select 1: VIDEO 1.0V ADJUST from the menu. Set the CONTRAST MAX and VIDEO INPUT 1.0V using the OSD of the monitor set. Press the ↵ against the message of "hit return key" Press the ↵ as other message is displayed. Press the [E] to return to the menu of Q2 and return to the main menu using the [E].	
L	FINAL SETTING 8) Clear user preset	L1 L2 L3		MODE-43	Set the cell to the menu at left and press the ↵. Select the 5: Clear user preset from the menu. Press either Y or N when the message of "CANCEL USER PRESET DATA (y/n)-> "has been output after a while.	
M	DATA SAVING 6) Save data to FILE		M1 M2		Set the cell to the menu at left and press the . Key in the file name after [ ]:. Use SERIAL No. as a file name. (EXAMPLE: FF4111557="411557.DAT")	

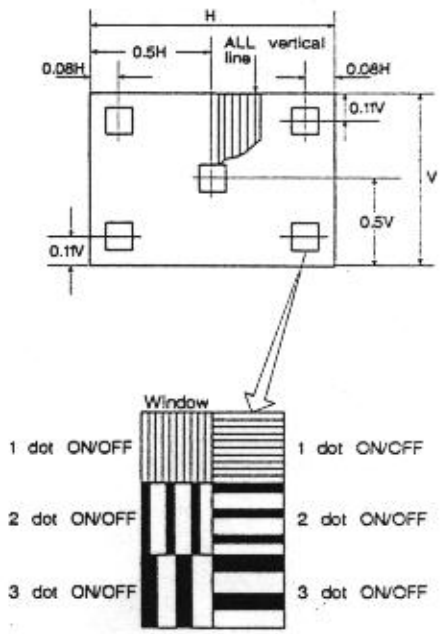
CHECK ITEM

These items are intended for a recheck after adjustment and for a check of the following function operations:

1. Resolution check
2. Brightness variation check
3. Gradation check
4. Brightness check
5. Deflection linearity check
6. Distortion check
7. Image stability check
8. Blinking image check
9. Circuit operation check
10. Specific function check
11. Power save function check

1. Resolution Check

(1) Apply resolution check pattern.



(2) Check with the normal signal and inverted signal. Check to be sure that display color between dots is uniform and that there are no color difference and spotty display color.

(3) Check the entire image quality including resolution.

2. Brightness Variation Check

(1) Cause the white full dot pattern to be displayed with the Mode-43 signal.

(2) Set the contrast to a maximum.
Set the brightness to the center.

(3) Make sure that a brightness difference between the center and periphery is < 65% with the horizontal magnetic field in the condition of ± 30 μ T.

3. Gradation Check

(1) Cause the 16 grayscale to be displayed with the Mode-43 signal. (White gradation waves.)

(2) Set the contrast to a maximum and the breghtness to the center.

(3) At this time, the 1st gradation (black level) cannot be seen and the 2nd gradation must be barely lit.

(4) With the brightness set to the center, vary the contrast from the maximum point and the gradation tracking must be good at that time.

Note: If tint (particularly the gray, which is a middle color) is different, make adjustment of the white balance once again.

(5) With the contrast set to a maximum, vary the brightness from the maximum point to the minimum point and check to be sure that the brightness of the low gradation portion changes.

Note: Check both the color select 9300K and 6550K.

4. Brightness Check

(1) Cause the white full-flat field pattern to be displayed with the Mode-43 signal.

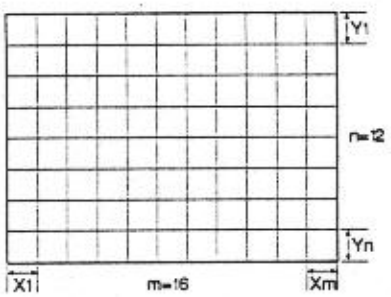
(2) Make sure that the brightness value is < 15 cd/m² when the contrast is set to a minimum and the brightness to the center.

5. Deflection Linearity Check

(1) Display the green only crosshatch pattern.

$$\text{Horizontal linearity} = \frac{X\ \text{max.} - X\ \text{min.}}{X\ \text{max.} + X\ \text{min.}} \times 100\%$$

$$\text{Vertical linearity} = \frac{Y\ \text{max.} - Y\ \text{min.}}{Y\ \text{max.} + Y\ \text{min.}} \times 100\%$$



(2) To confirm the horizontal deflection linearity, proceed in the next input signal modes:

Mode-3
Mode-56
Mode-43
} ≦ 7%

To confirm the vertical defllection linearity, proceed in the following input signal modes :

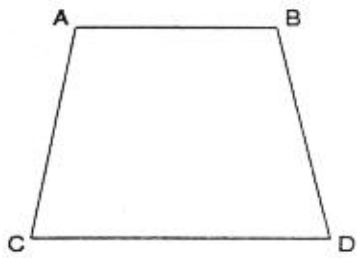
Mode-3
Mode-43
} ≦ 6%

6. Distortion Check

(1) Apply the signal of the following mode and supply the green crosshatch pattern.
Mode-3
Mode-56
Mode-43

(2) Make sure that each value comes within the values indicated below.

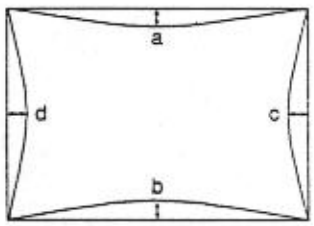
• Total distortion



$$\left|\frac{AC-BD}{AC+BD}\right| \times 100 \leqq 1.3\%$$

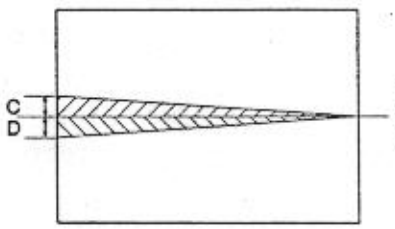
$$\left|\frac{AB-CD}{AB+CD}\right| \times 100 \leqq 1.2\%$$

• Pincushion



a, b, c, d ≦ 2.0 mm

• Rotation



C, D ≦ 2.5 mm

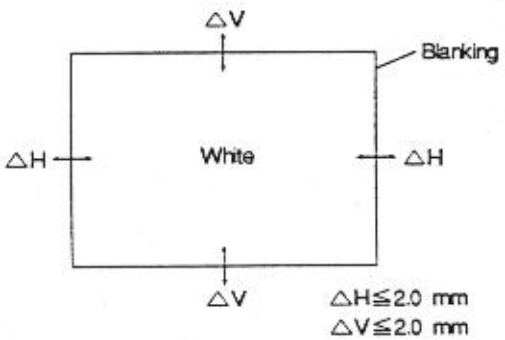
7. Image Stability Check

(1) Check to be sure that the size variations are < 2 mm for horizontal size and < 1.5 mm for vertical size when the white full dot pattern of Mode- 3/ Mode-43 is displayed and the AC voltage is changed to 90 ~ 264 V.

(2) Make sure that the size variations are < 2mm for horizontal size and < 1.5 mm for vertical size when contrast is changed to a minimum from maximum at the AC voltage of 120V/240V.

8. Blinking Image Check

(1) Apply blinking patern signal. (100%)



(2) Check the image stability at Mode-3 and Mode-4 3.
Check if image changes due to blinking meets the standards below using the microscope.

9. Circuit Operation Check

(1) Check the protection operation at fH not covered in the specifications.

(2) Apply fH = 28 KHz and 66KHz signal and check to be sure that sync flows.

10. Specific Function Check

(1) Create the crosshatch pattern using the Mode-3 signal of the preset timing.

(2) Vary the vertical size and the deviation of the horizontal size and check to be sure that the horizontal size and horizontal position variations meet the valuse given below.

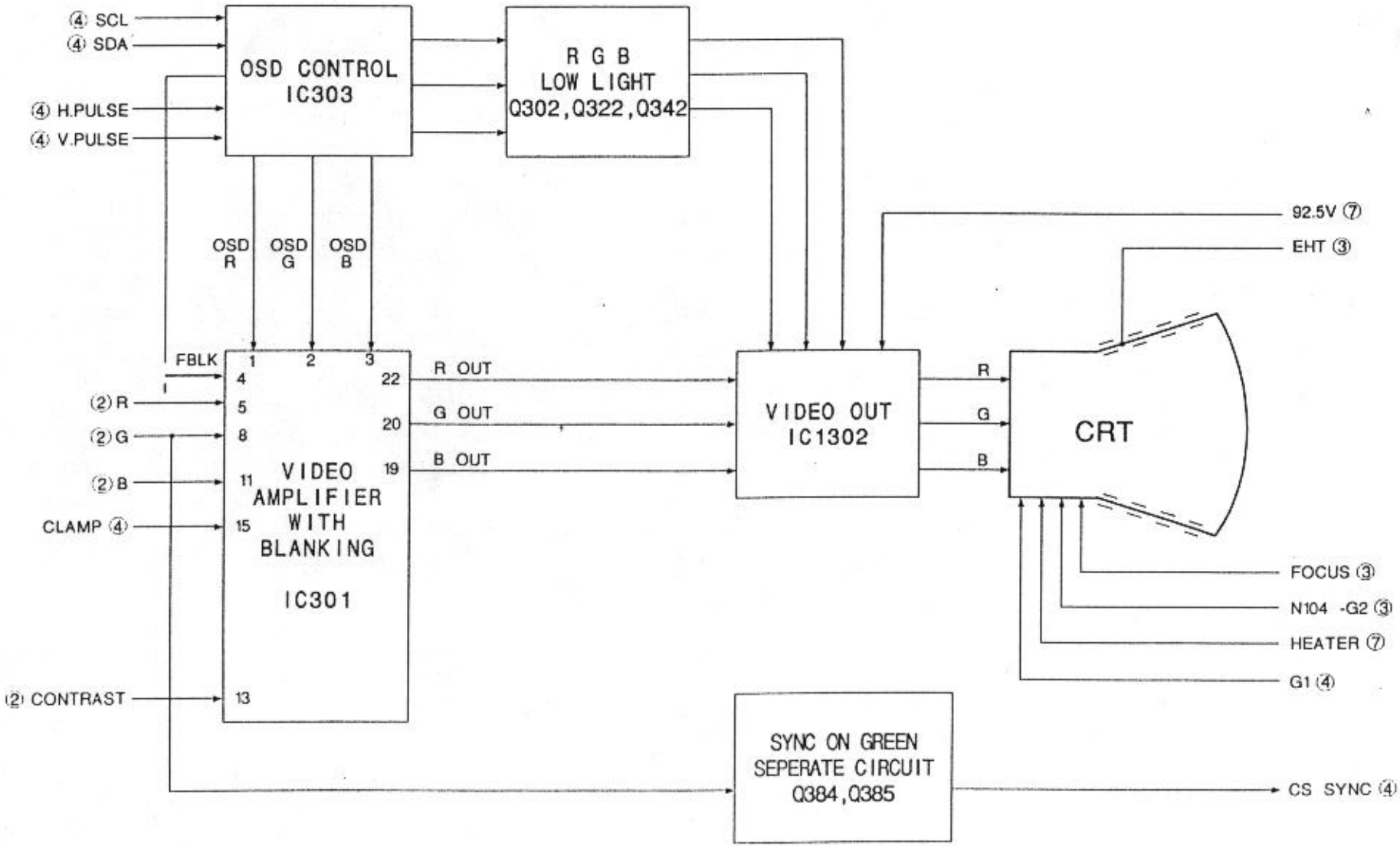
Vertical size	→ +/- 20 mm or more
Vertical position	→ up and down 5mm or more
Horizontal size	→ MIN. < 250 mm MAX. > 280 mm
Horizontal position	→ left 20 mm or more
Horizontal position	→ right 20 mm or more

11. Power Save Function Check

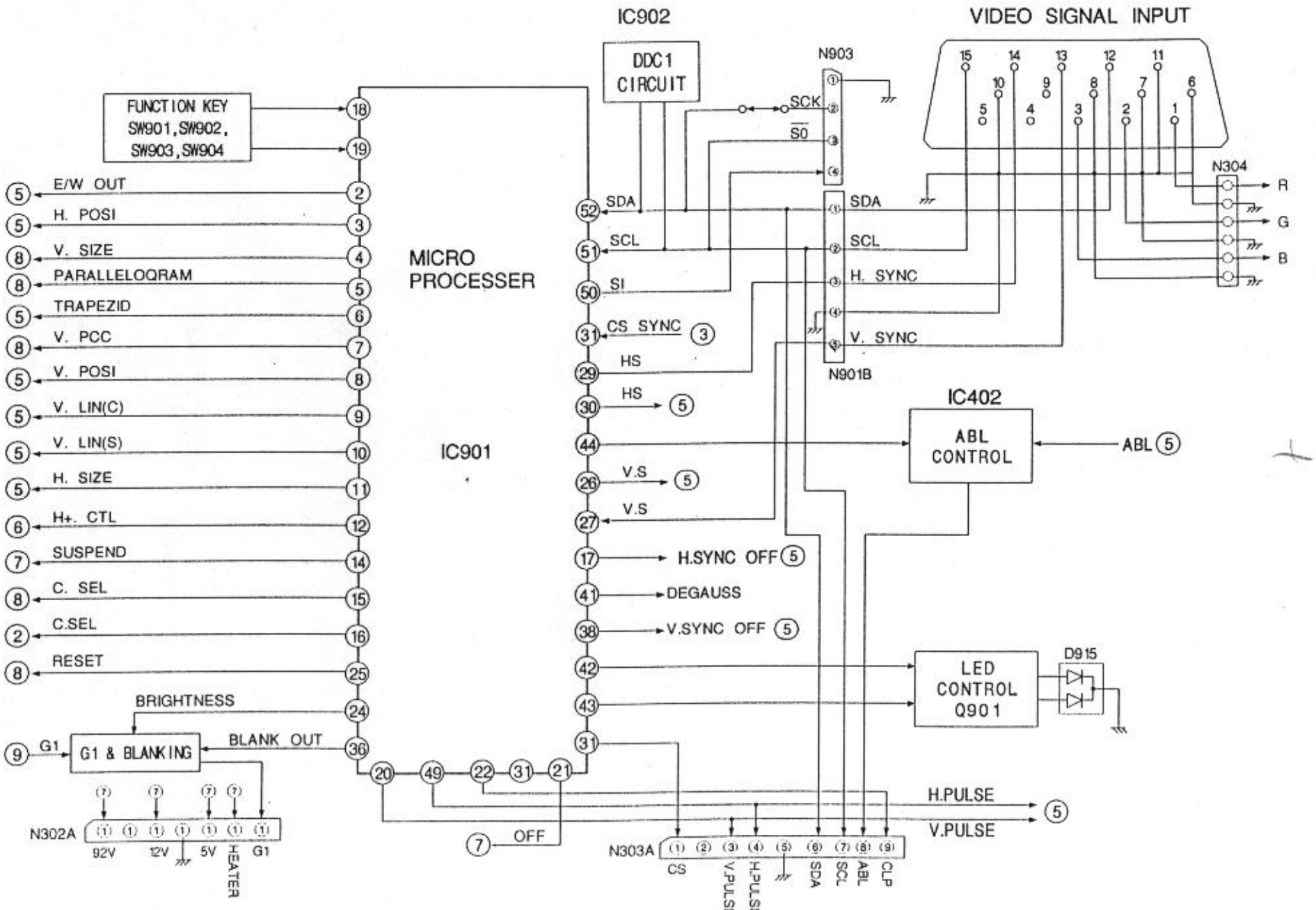
The power consumption must meet the specifications when the horizontal/vertical sync signals are changed as shown below.

H.SYNC	OFF	ON	OFF
V.SYNC	ON	OFF	OFF
SPEC	< 30W	< 30W	< 8W

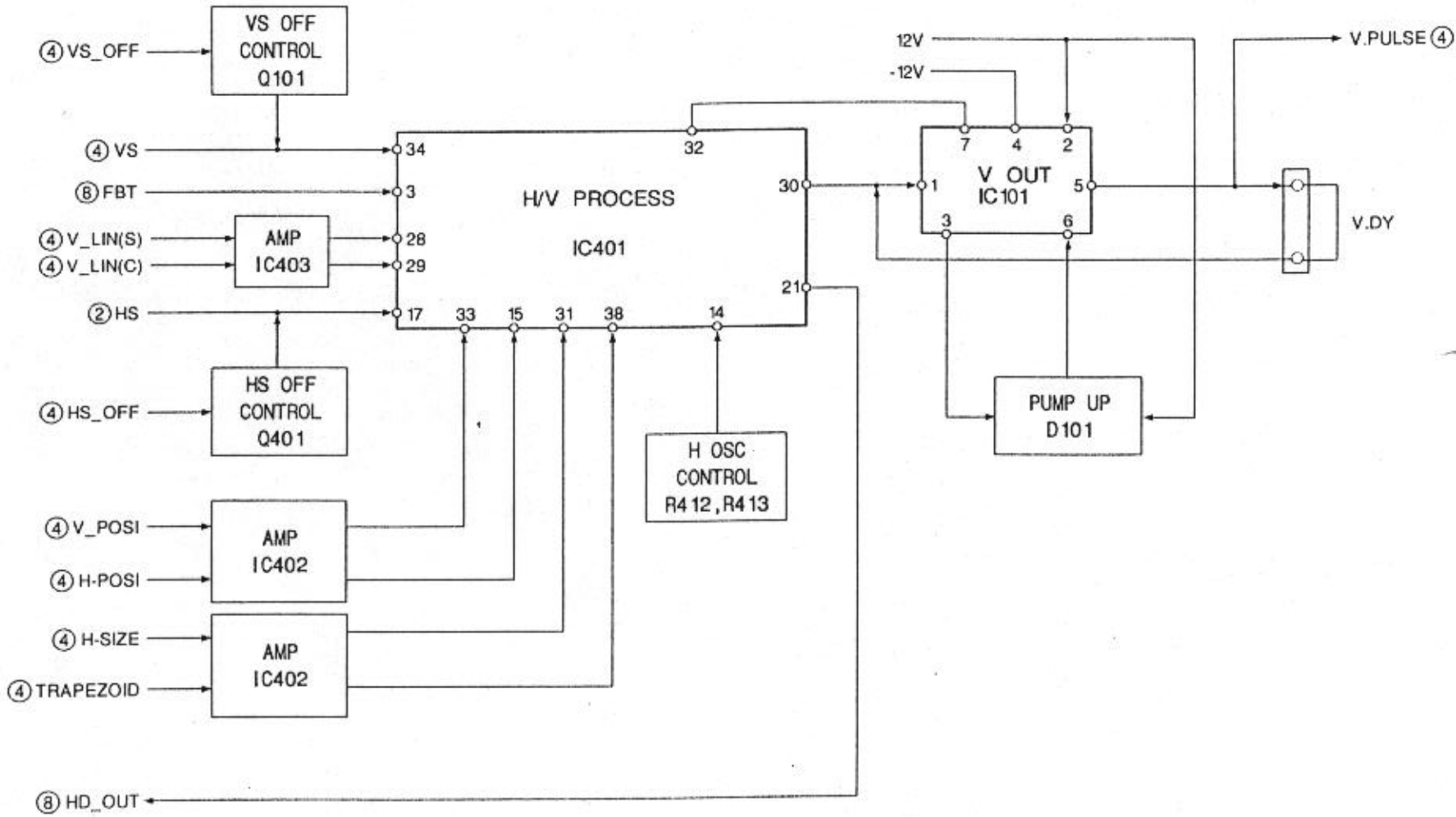
SHEET (3) VIDEO OUT



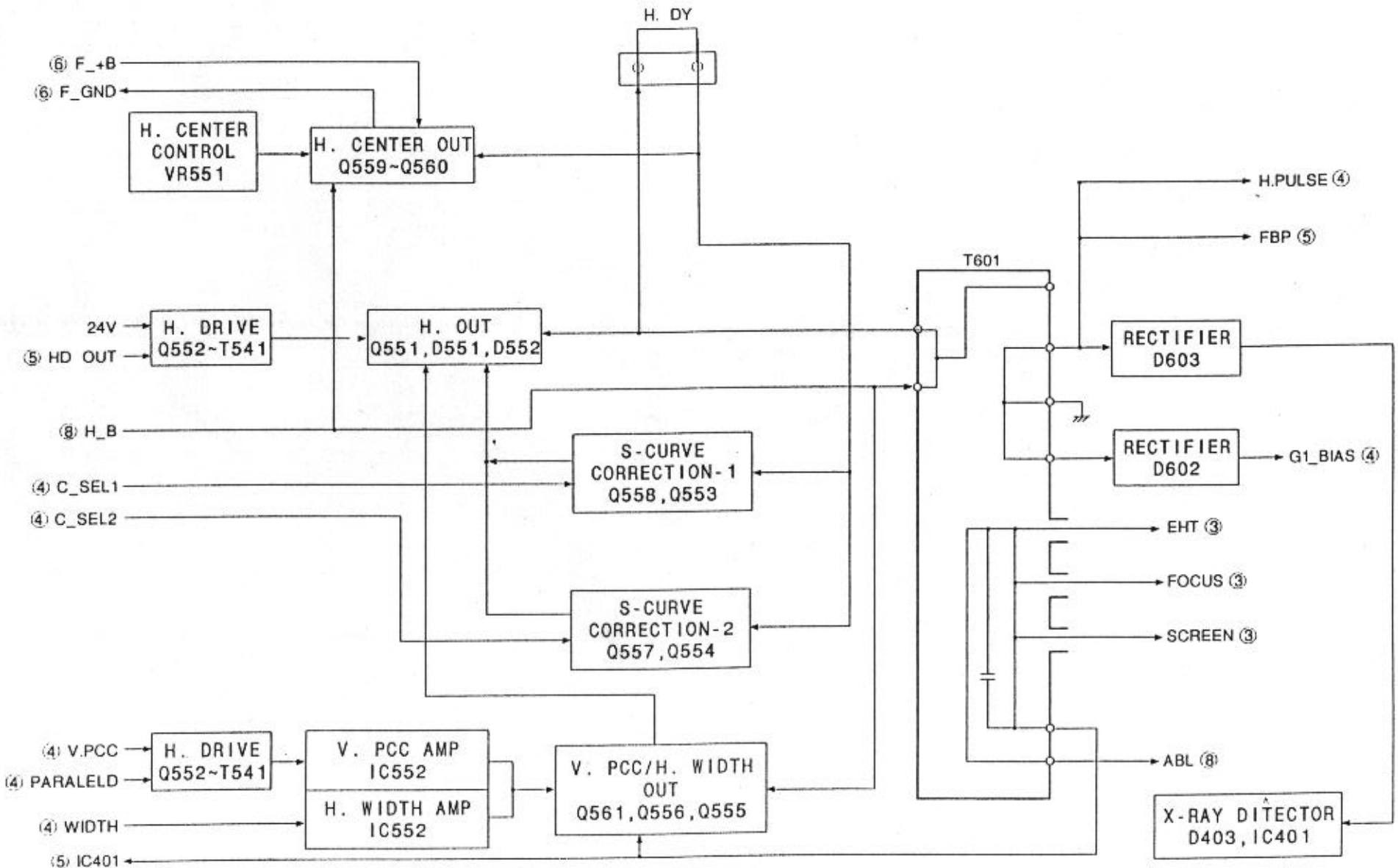
SHEET (4) MICROPROCESSSER / DIGITAL ANALOG CONVERTER / SIGNAL IN



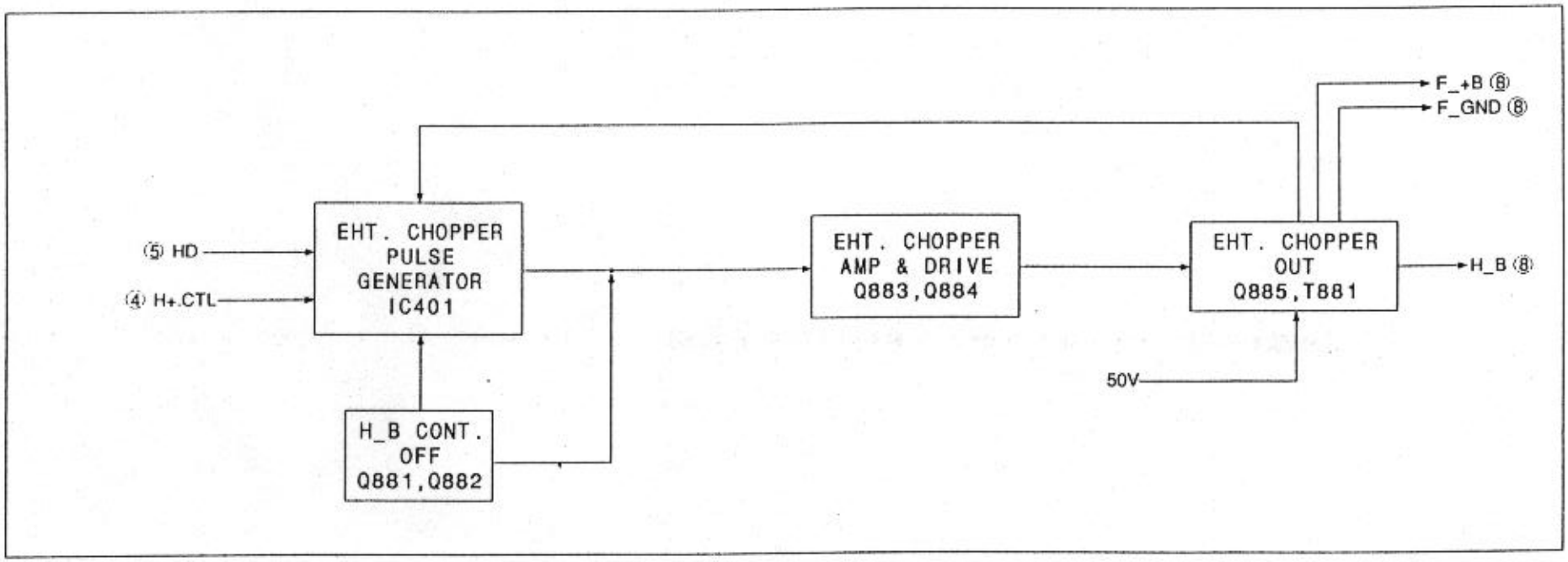
SHEET (5) H OSC / V OSC OUTPUT



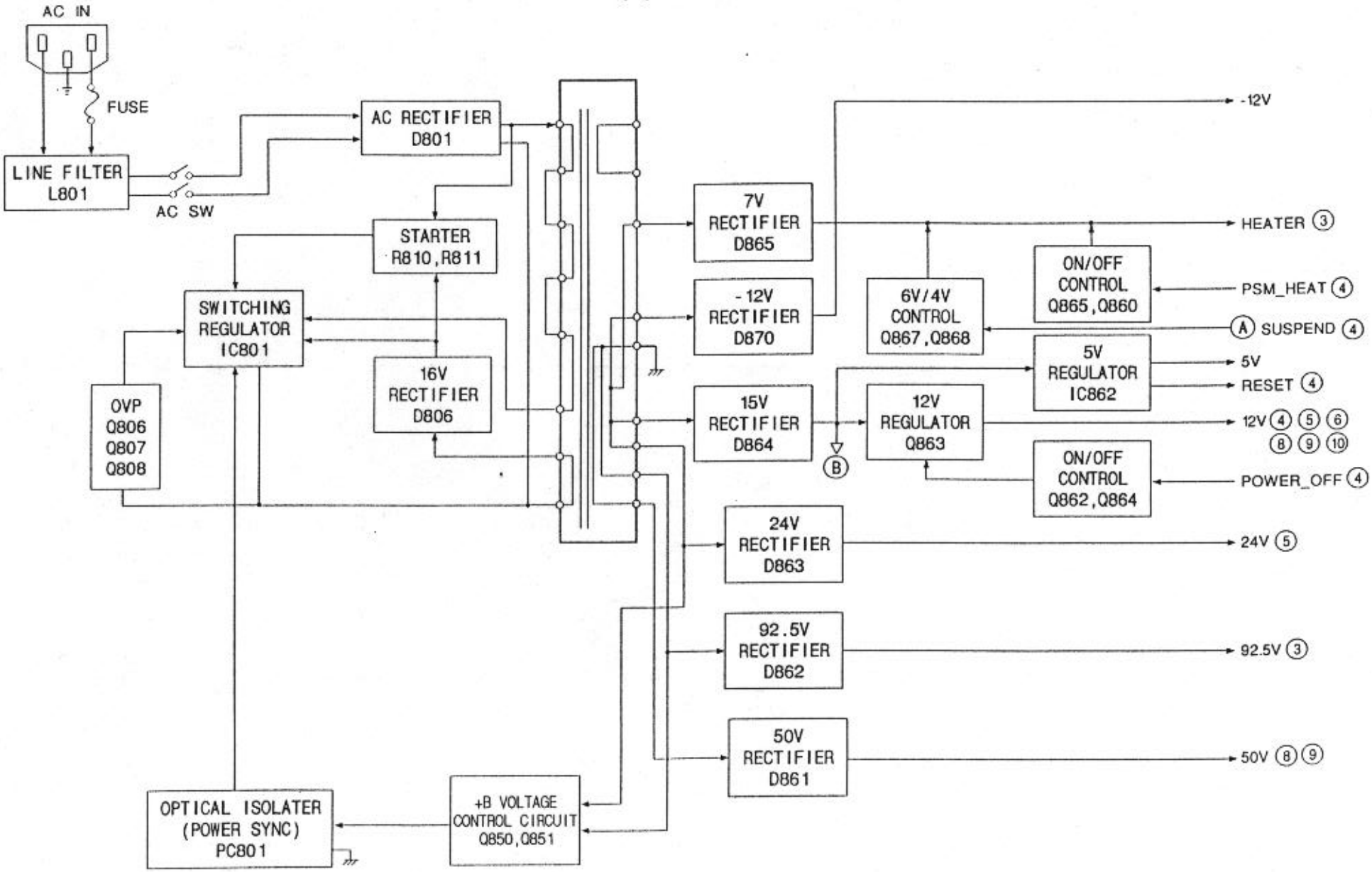
SHEET (8) H OUTPUT / GEOMETRY CONTROL



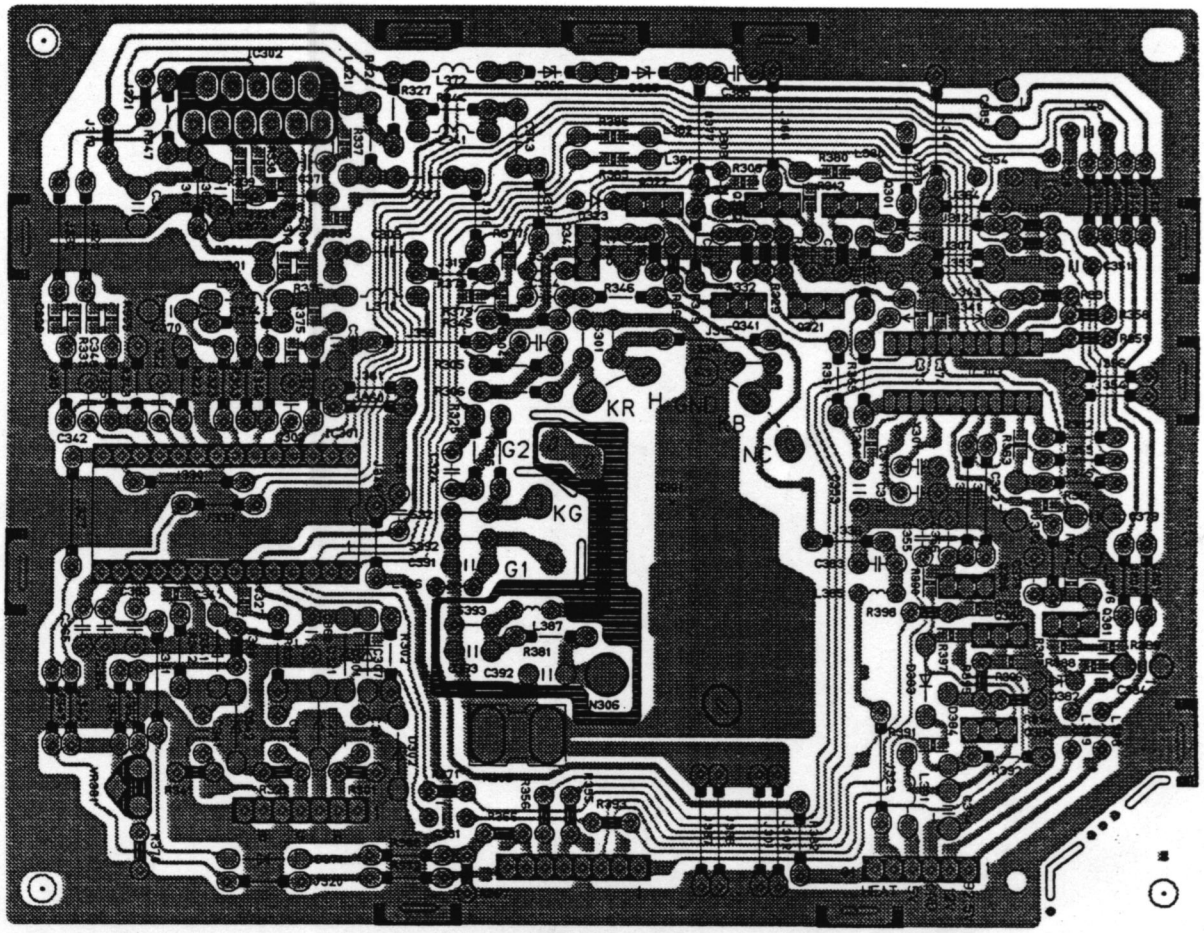
SHEET (6) EHT CHOPPER



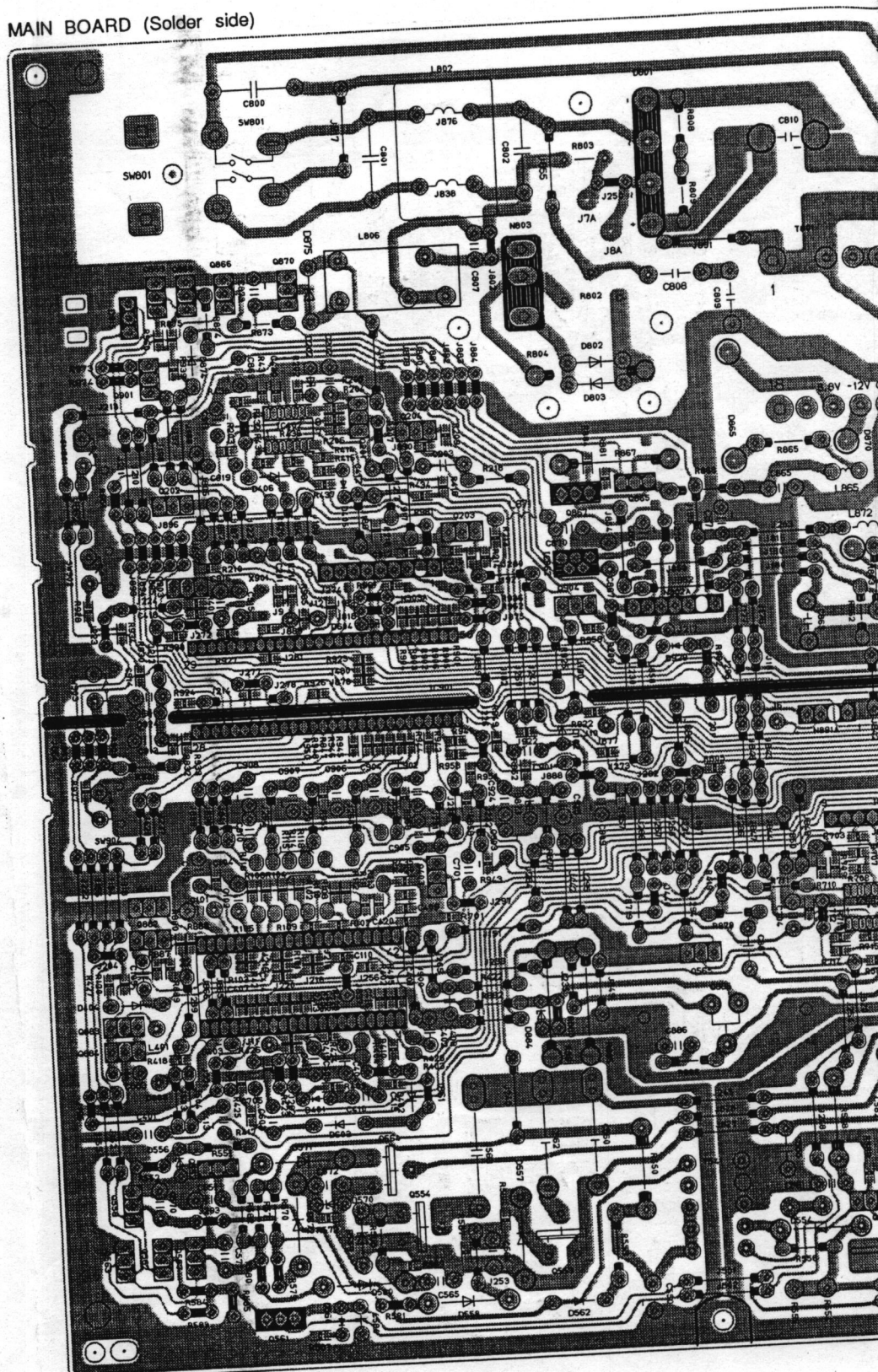
SHEET (7) POWER SUPPLY



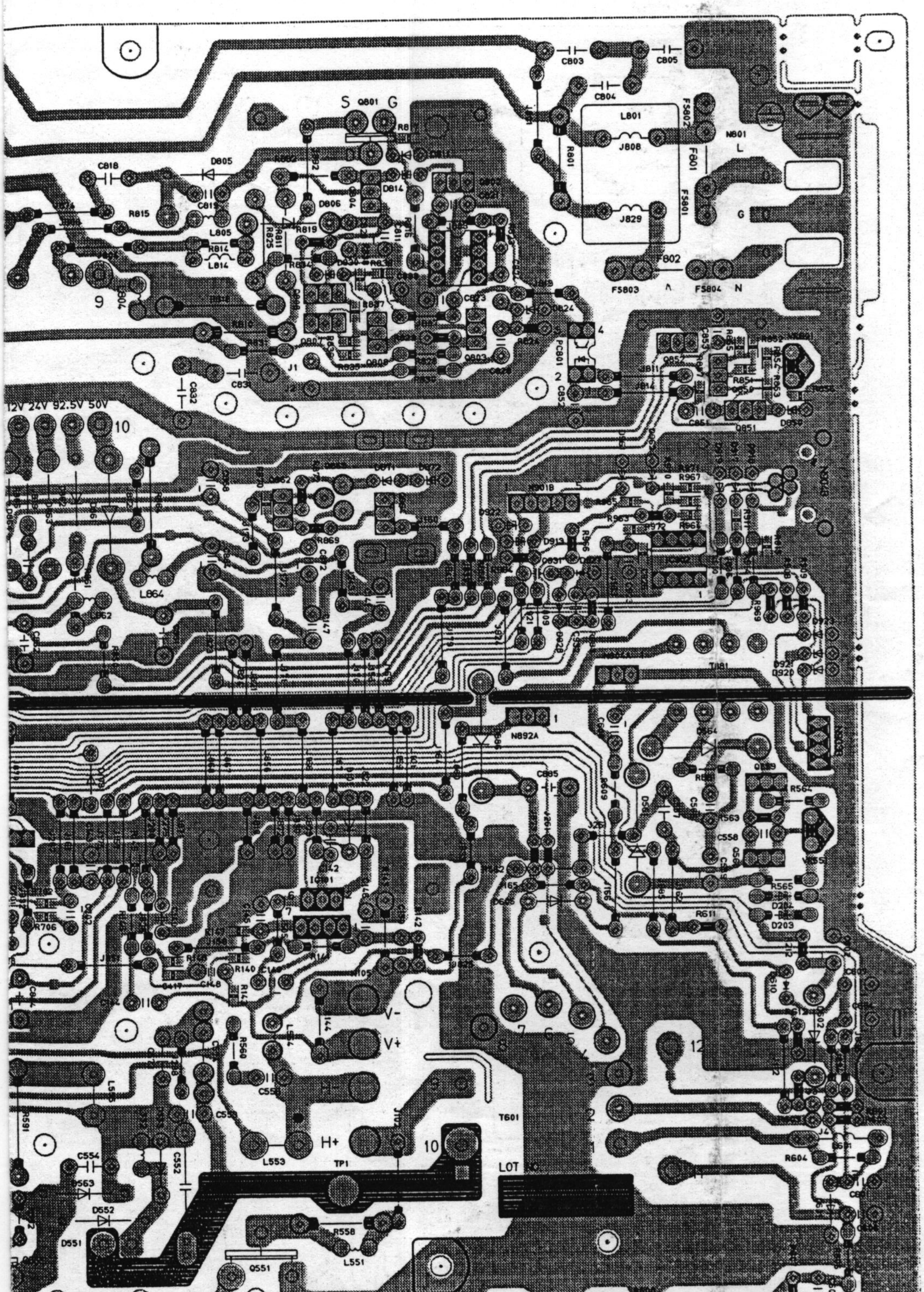
CRT BOARD (Solder side)



MAIN BOARD (Solder side)

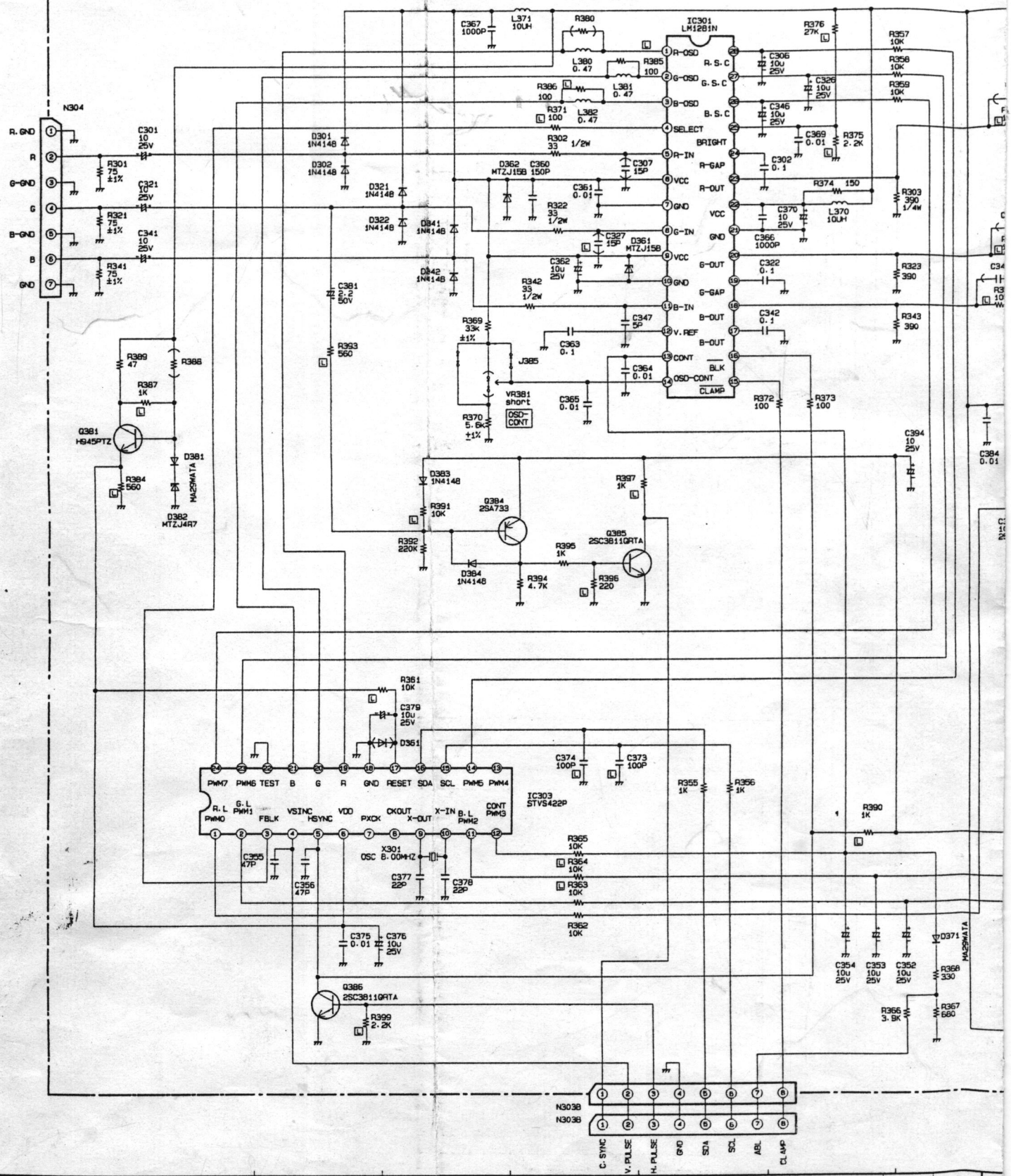


OR VIEW



S
Q801
G
C803
C805
C804
L801
J808
F5802
F801
F5801
N801
L
G
J829
F802
F5803
F5804
N
C818
D805
R815
L805
L814
R819
D806
D814
J1
C832
C833
C823
D824
R824
PCB01
Q803
Q808
Q807
12V 24V 92.5V 50V
10
R869
L864
R967
R963
R961
D913
D922
N901B
Q852
Q851
D857
T181
N892A
C885
D931
D920
R564
C558
R563
R565
D203
D202
R611
R706
R140
IC301
R142
V-
V+
H-
H+
L553
C554
D563
D552
D551
C552
C553
C556
R560
R591
L555
TP1
T601
LOT
R558
L551
Q551
J111
R604
12

SCHEMATIC DIAGRAM FOR MODEL 1569GS-3



Important safety notice

Components identified by ⚠ mark have special characteristic important for safety. When replacing any of components, use only manufacturer's specified parts.

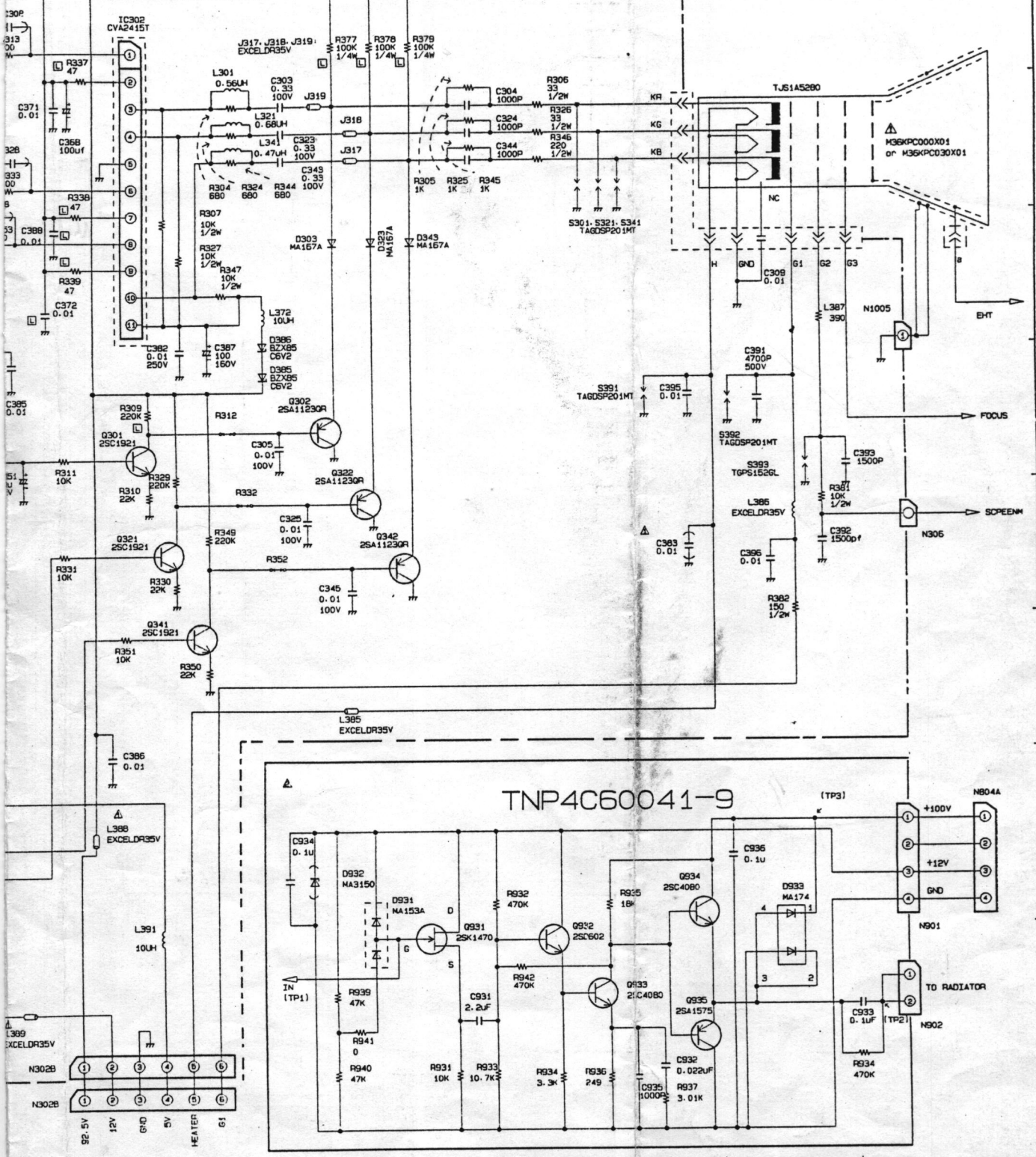
SYM	DATE	REVISION
1	84.11.24	REVISION 2.0
2	85.2.5	REVISION 3.0

SIGNED	CHECKED	SYM	DATE	REVISION

H I J K L

SHEET (1)
REVISION 3.0

THE COMPONENT IN PARENTHESIS ( ) IS NOT PROVIDED.



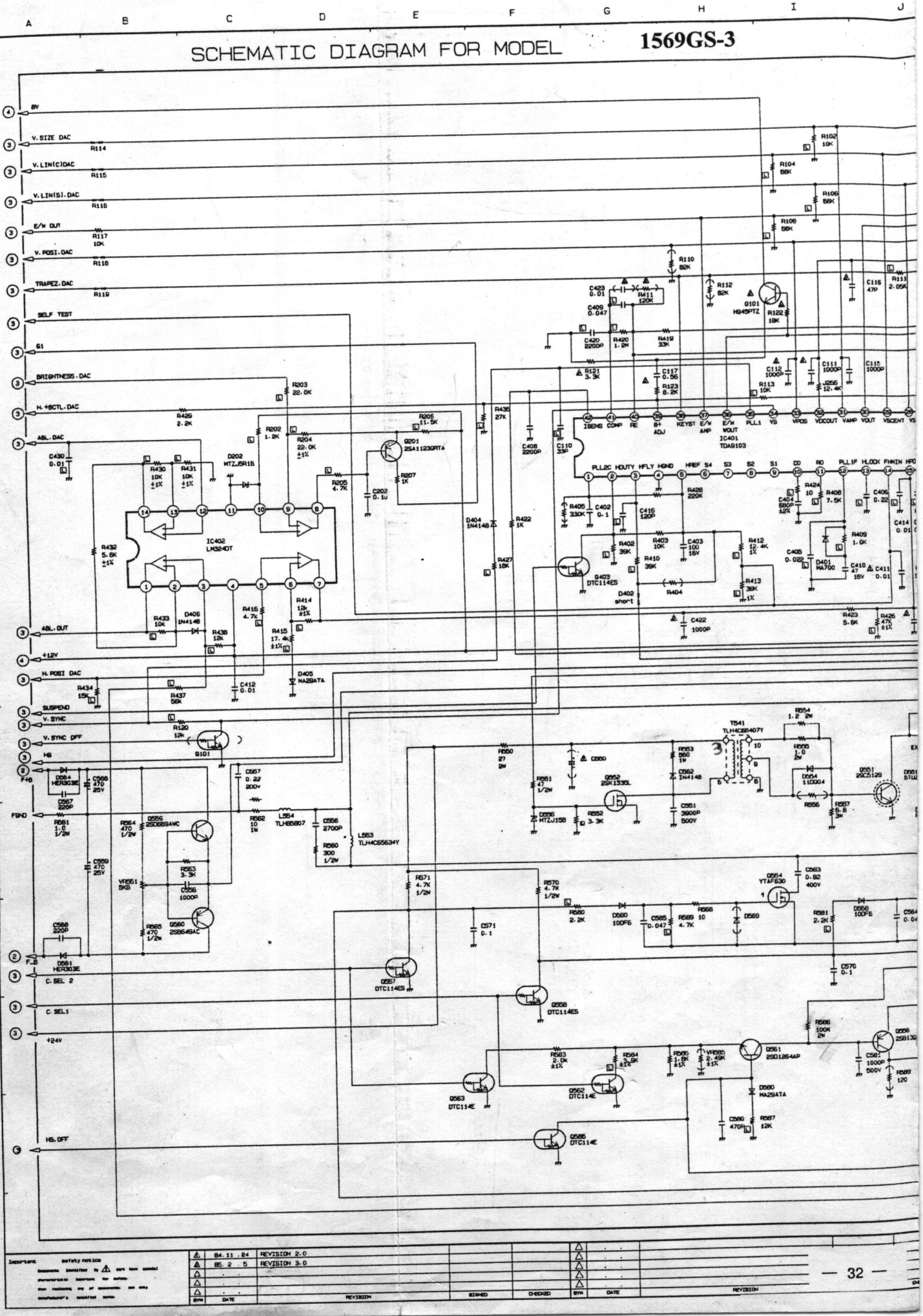
STOR	△ Solid	○ Nonflammable	⊠ Metal Oxide	Film Type: ▱ Rectangular	⊗ Fusible	○ Metal Film	□ Wire Wound	L EMP			
CITOR	Ⓜ Polyester	Ⓜ Metallized Polyester	Ⓢ Polystyrene	⊠ Polypropylene	△ Mica	○ Ceramic (B.)	⊗ Temperature Compensation	○ Ceramic	Ⓣ Tantalum		
TLE											

ENGINEERING DEPT. SECTION:

MODEL NO.	1569GS-3		
DRAWING NO.			
ISSUED	1996. 3. 22		

PREPARED	REVIEWED	APPROVED

SCHEMATIC DIAGRAM FOR MODEL 1569GS-3



SYM	DATE	REVISION	SIGNED	CHECKED	SYM	DATE	REVISION
2	84.11.24	REVISION 2.0					
3	85.2.5	REVISION 3.0					

Important safety notice

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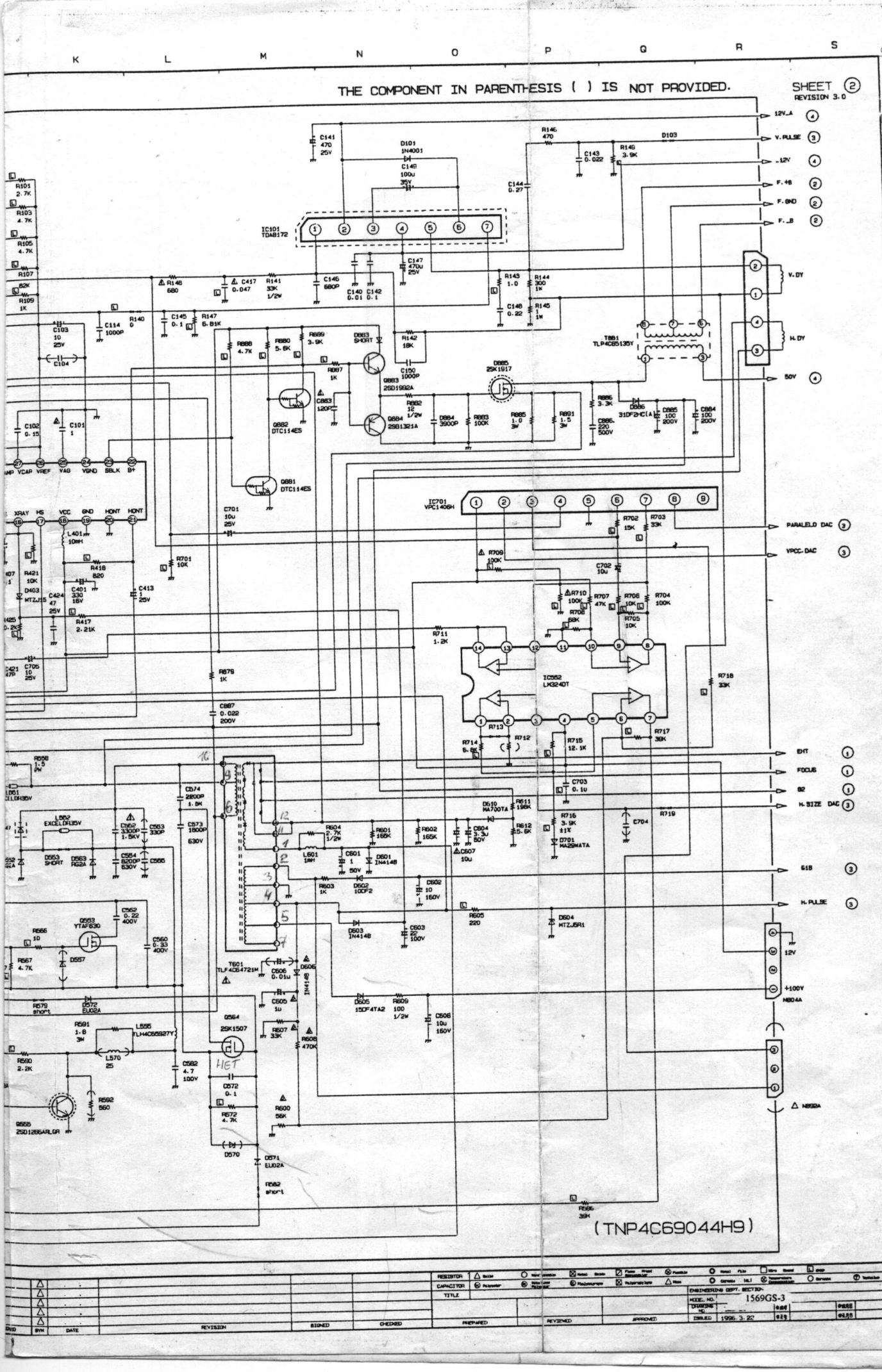
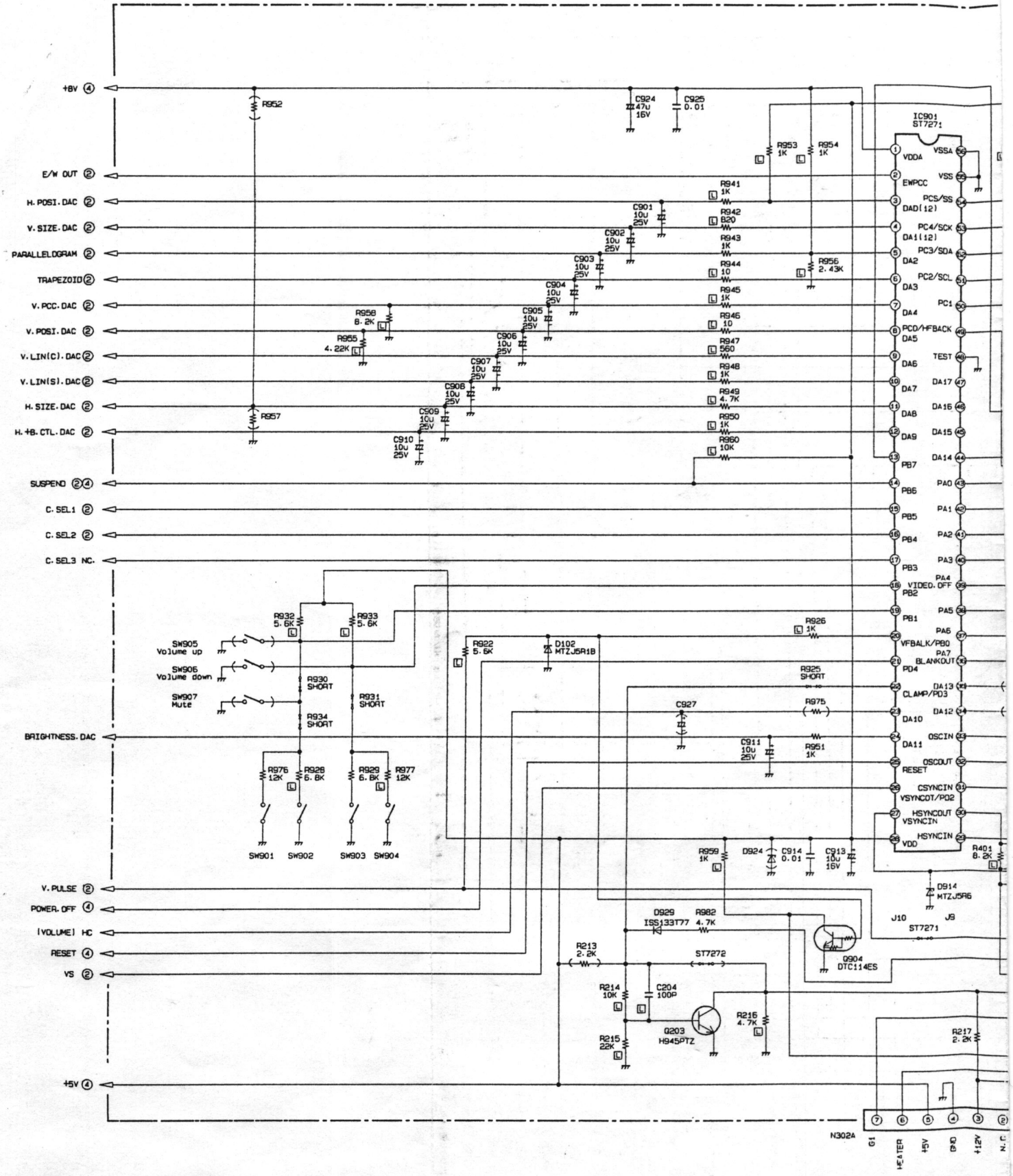

THE COMPONENT IN PARENTHESIS ( ) IS NOT PROVIDED.
SHEET ②
REVISION 3.0
(TNP4C69044H9)

SCHEMATIC DIAGRAM FOR MODEL 1569GS-3



Important safety notice

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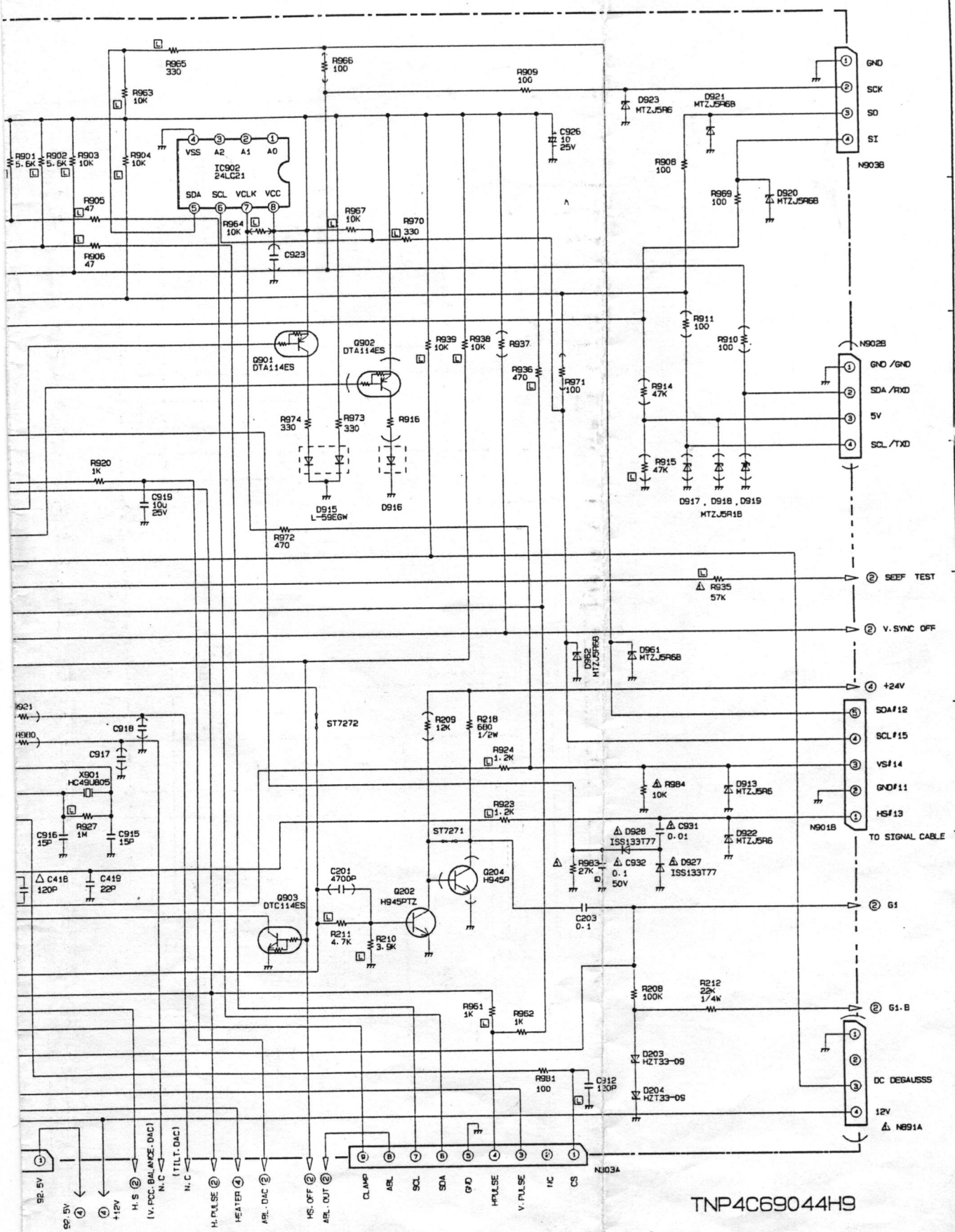
SYM	DATE	REVISION	SIGNED	CHECKED
1	84.11.24	REVISION 2.0		
2	85.2.5	REVISION 3.0		

H I J K L

THE COMPONENT IN PARENTHESIS ( ) IS NOT PROVIDED.

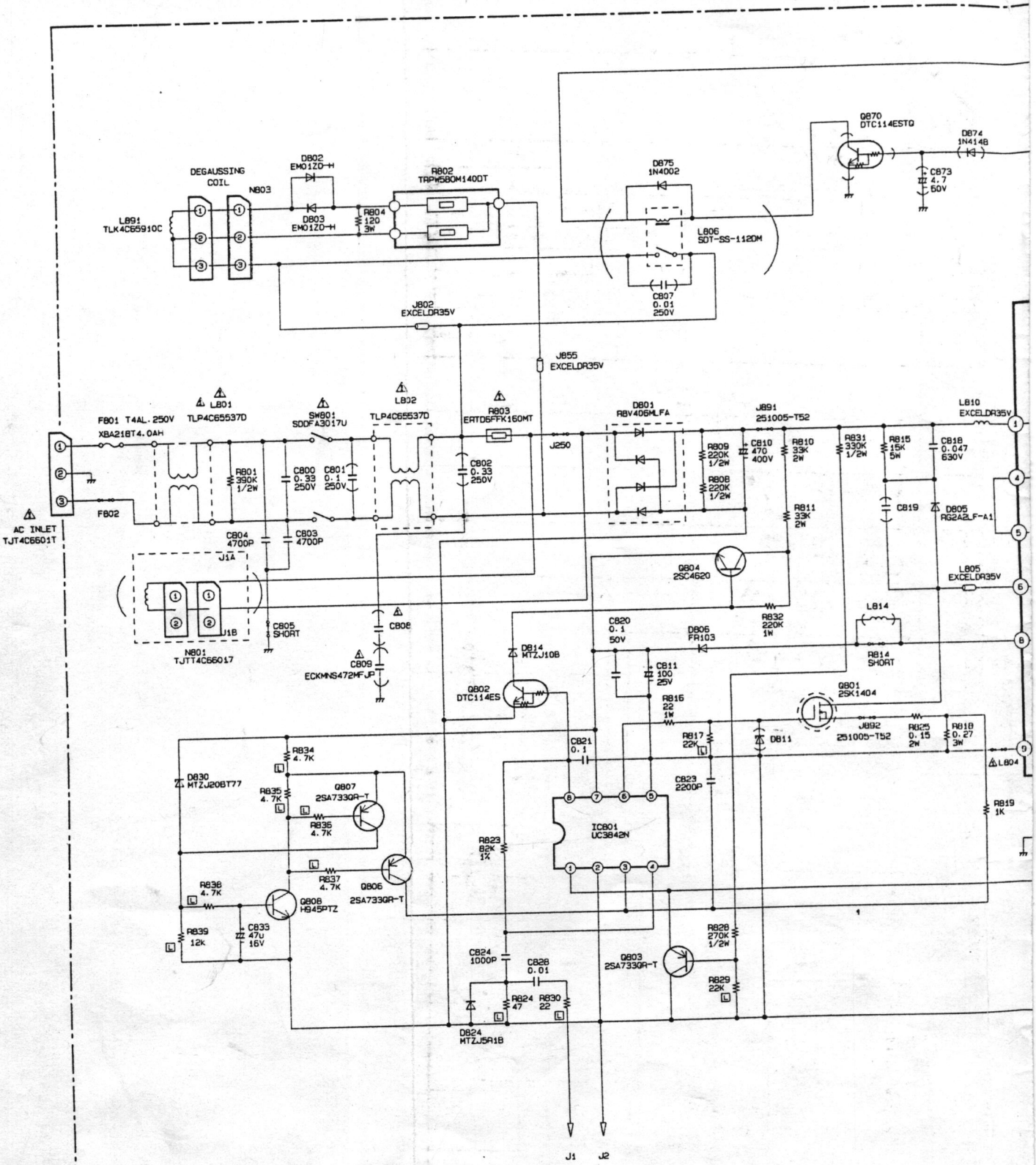
SHEET ③
REVISION 3.0



TNP4C69044H9

RESISTOR	△ Solid	○ Nonflammable	⊠ Metal Oxide	⊠ Flame Proof Rectangular	⊗ Fusible	○ Metal Film	□ Wire Wound	L CHIP			
CAPACITOR	Ⓜ Polyester	Ⓜ Metallized Polyester	Ⓢ Polystyrene	⊠ Polypropylene	△ Mica	○ Ceramic	Ⓜ Temperature Compensation	○ Ceramic	Ⓣ Tantalum		
TITLE					ENGINEERING DEPT. SECTION						
					MODEL NO. 1569GS-3						
PREPARED		REVIEWED		APPROVED	ISSUED 1996. 3. 22						

SCHEMATIC DIAGRAM FOR MODEL 1569GS-3



TNP4C69044H9

Important safety notice
Components identified by ⚠ mark have special characteristic important for safety. When replacing any of components, use only manufacturer's specified parts.

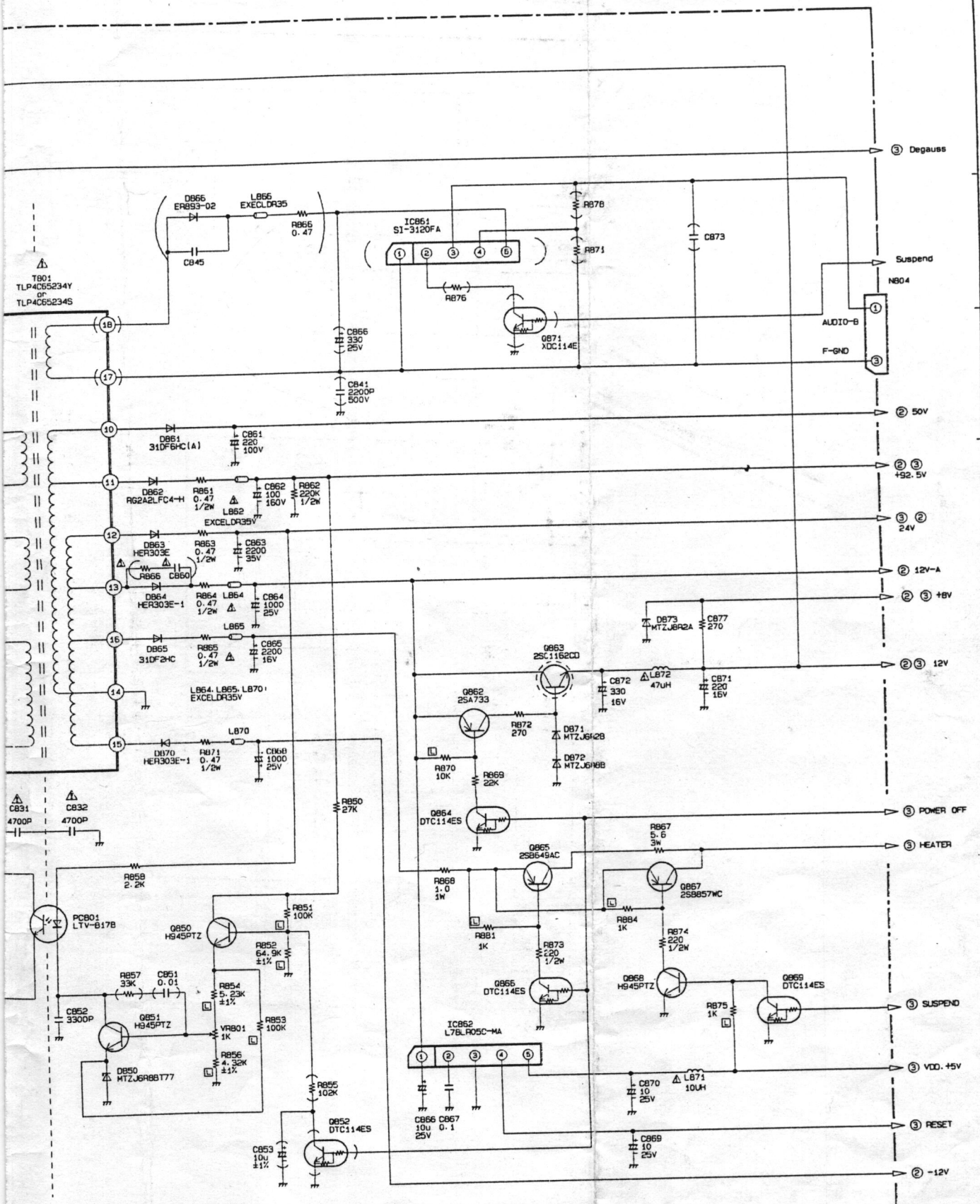
SYM	DATE	REVISION	SIGNED	CHECKED
⚠	84.11.24	REVISION 2.0		
⚠	85.2.5	REVISION 3.0		

2557754

H I J K L

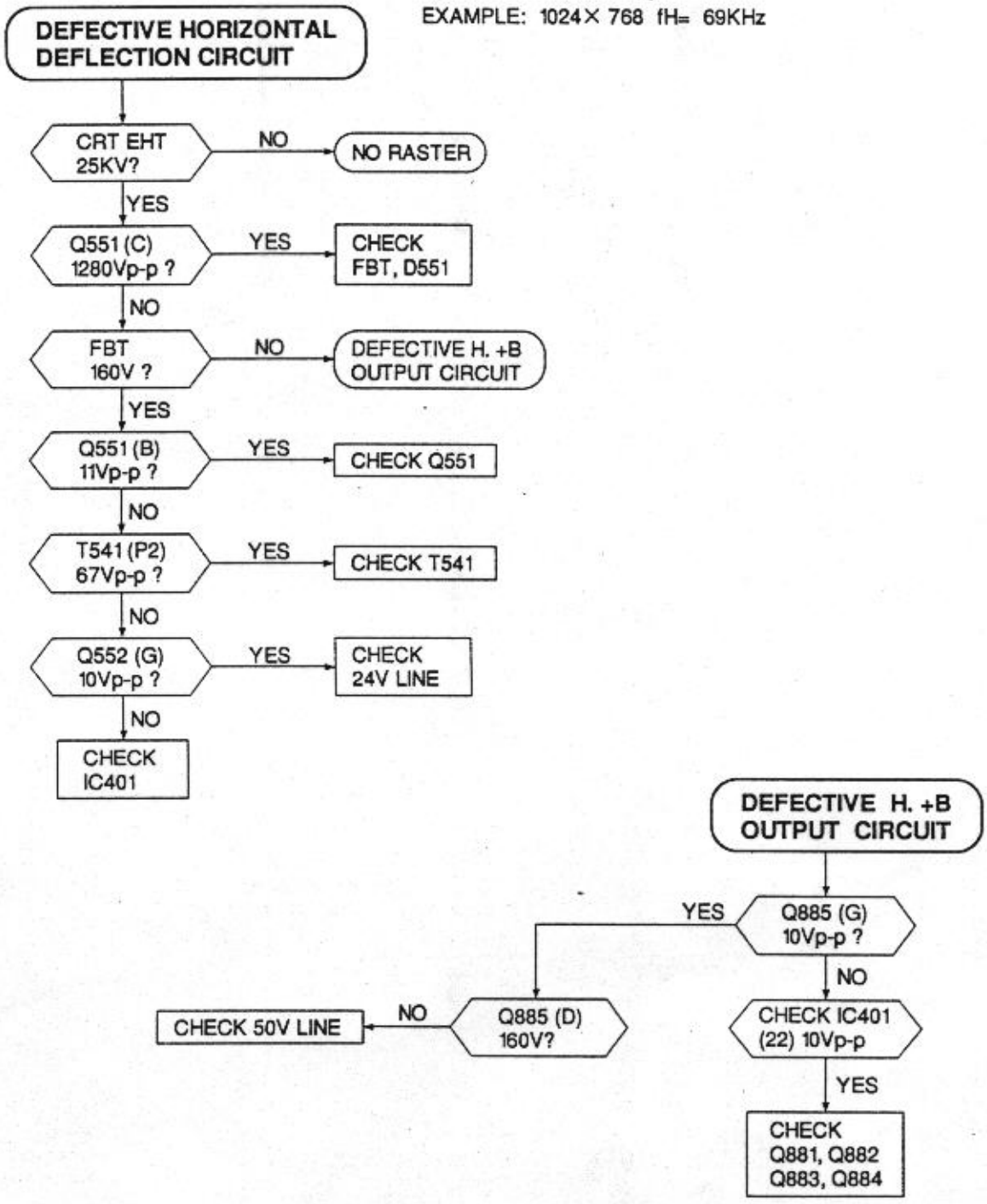
.THE COMPONENT IN PARENTHESIS ( ) IS NOT PROVIDED.

SHEET (4)
REVISION 3.0



RESISTOR	△ Solid	○ Noninflammable	⊠ Metal Oxide	⊠ Flame Proof Enclosure	⊗ Fusible	○ Metal Film	□ Wire Wound	L CHIP			
CAPACITOR	M Polyester	M Metallized Polyester	S Polystyrene	⊠ Polypropylene	△ Mica	○ Ceramic	Fil	⊗ Temperature Compensation	○ Ceramic	T Tantalum	
TITLE						ENGINEERING DEPT. SECTION					
						MODEL NO. 1569GS-3					
						DRAWING NO.					
CHECKED	PREPARED	REVIEWED	APPROVED			ISSUED 1995. . 22					

EXAMPLE: 1024× 768 fH= 69KHz



Please refer to block diagram for horizontal Deflection Circuit on page xx.

H. SYNC DOES NOT HOLD

If no horizontal and/or vertical sync from PC, then the power save circuit becomes active.

IC901 (29) 5.1Vp-p ?

5.1 Vp-p

IC901 (30) 5.1Vp-p ? — YES → CHECK IC401(17,21)

V. SYNC DOES NOT HOLD

IC901 (27) 5.1Vp-p ?

5.1 Vp-p

IC901 (26) 5.1Vp-p ? — YES → CHECK IC401(30,34), IC101

INCORRECT V.PCC

IC401 (30) 5.4Vp-p ? — NO → CHECK IC401

YES

IC701 (2) 2.5Vp-p ? — NO → CHECK IC701, IC901(7)

YES

IC701 (3) 5.0Vp-p ? — NO → CHECK IC701

YES

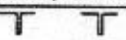
IC552 (7) 6.4Vp-p ? — YES → CHECK Q555, 556, 561

NO

CHECK IC552

BRIGHT HORIZONTAL LINE APPEARS ON THE SCREEN

IC101 (5) 42Vp-p ? — YES → CHECK DY D101, Q204, Q202



NO

IC101 (2) 16V ? — NO → CHECK 12V & -12V LINE

YES

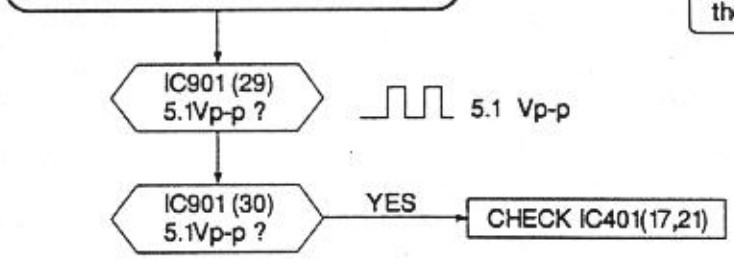
IC101 (7) 4.3Vp-p ? — NO → CHECK IC401

YES

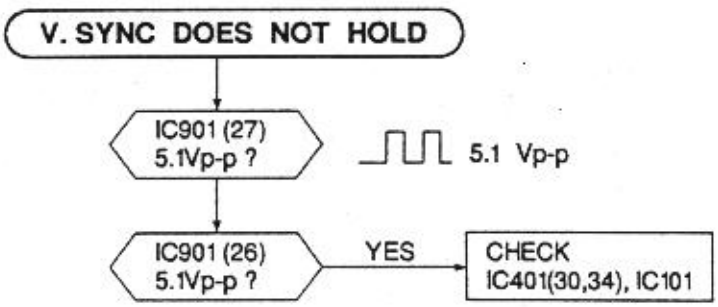
CHECK IC101

H. SYNC DOES NOT HOLD

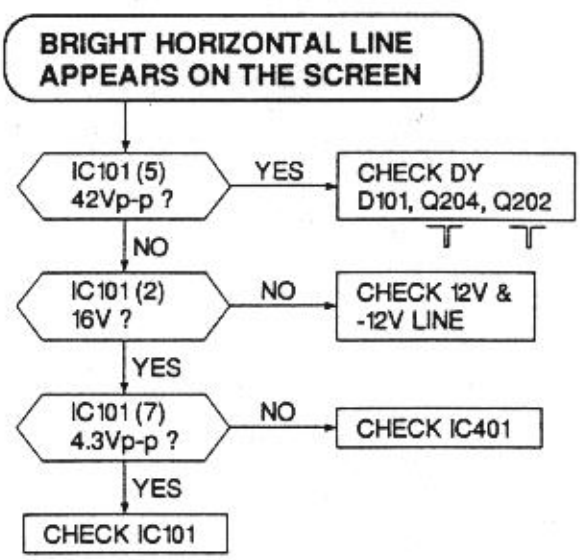
If no horizontal and/or vertical sync from PC, then the power save circuit becomes active.



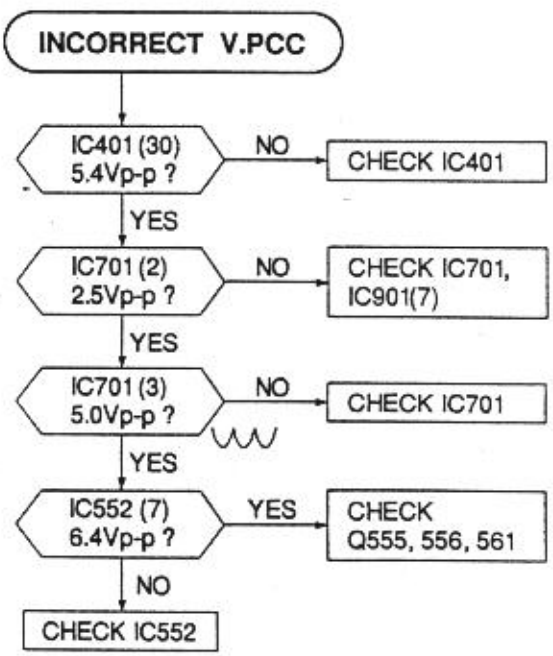
V. SYNC DOES NOT HOLD



BRIGHT HORIZONTAL LINE APPEARS ON THE SCREEN



INCORRECT V.PCC



ABNORMAL POWER SAVER

IC901 (30,26) 5Vp-p ? — NO → CHECK INPUT SIGNAL

YES

IC862 (5) 5Vp-p ? — NO → CHECK IC862, 16V LINE

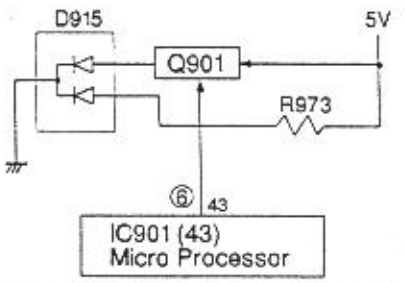
YES

CHECK Q883 OUTPUT 12V DC? — NO → CHECK Q862, 863

CHECK D873 — NO → CHECK 8V LINE

CHECK POWER SAVE CIRCUIT
Please refer to block daigram for power management system on page xx

ABNORMAL POWER INDICATOR



HS	VS	○	○	COLOR
ON	ON	H	L	GREEN
OFF	ON	H	H	YELLOW
ON	OFF	H	H	YELLOW
OFF	OFF	H	H	YELLOW

NO POWER

APPLY AC120V

D861 50V — YES → ABNORMAL POWER SAVER

NO

T801 (6) 110V ? — NO →

YES

IC801 (7) 16V ? — NO → CHECK D806, D807

YES

REPLACE IC801

NG

CHECK
16V LINE
24V LINE
50V LINE
-12V LINE

T801 (1) 108V ? — YES → CHECK Q801, T801, J891, J892

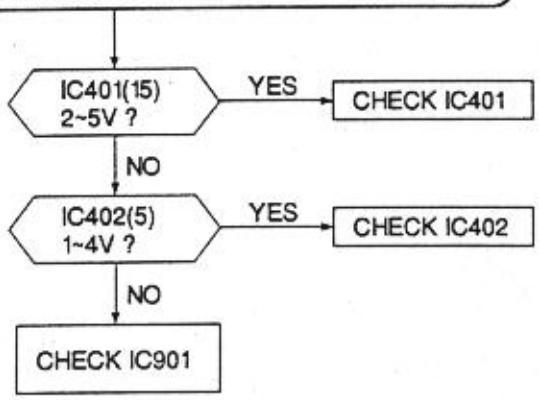
NO

D801 (2,3) 120V AC? — YES → CHECK D801

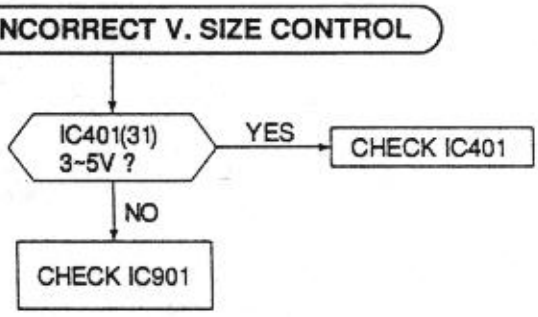
NO

CHECK
AC FUSE
AC INPUT

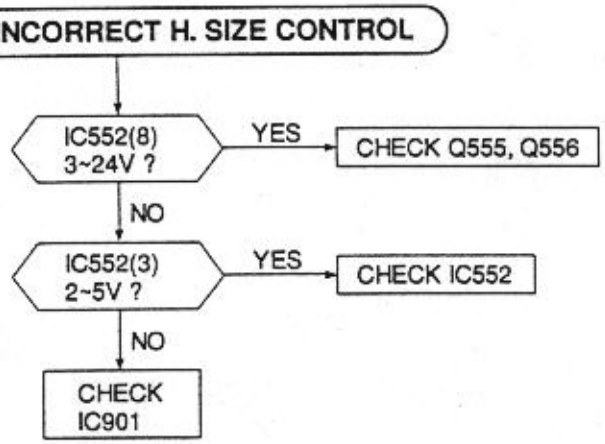
INCORRECT H. POSITION CONTROL



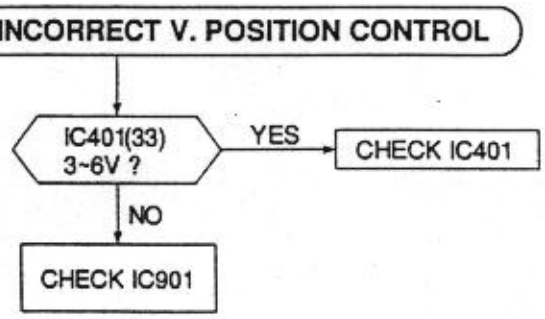
INCORRECT V. SIZE CONTROL

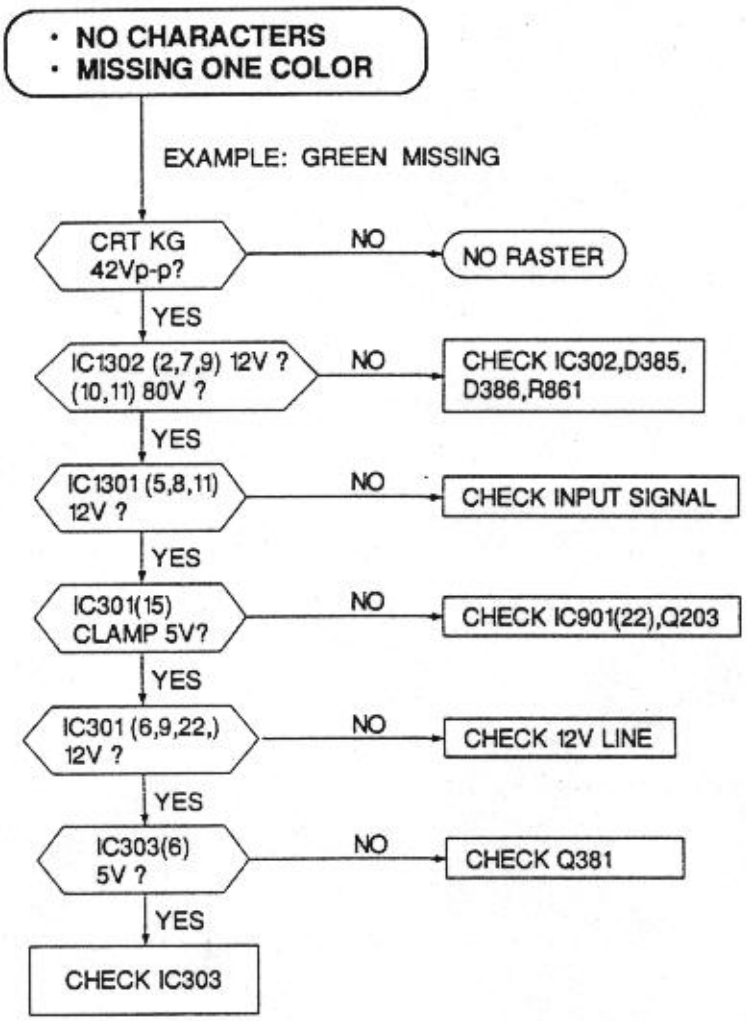


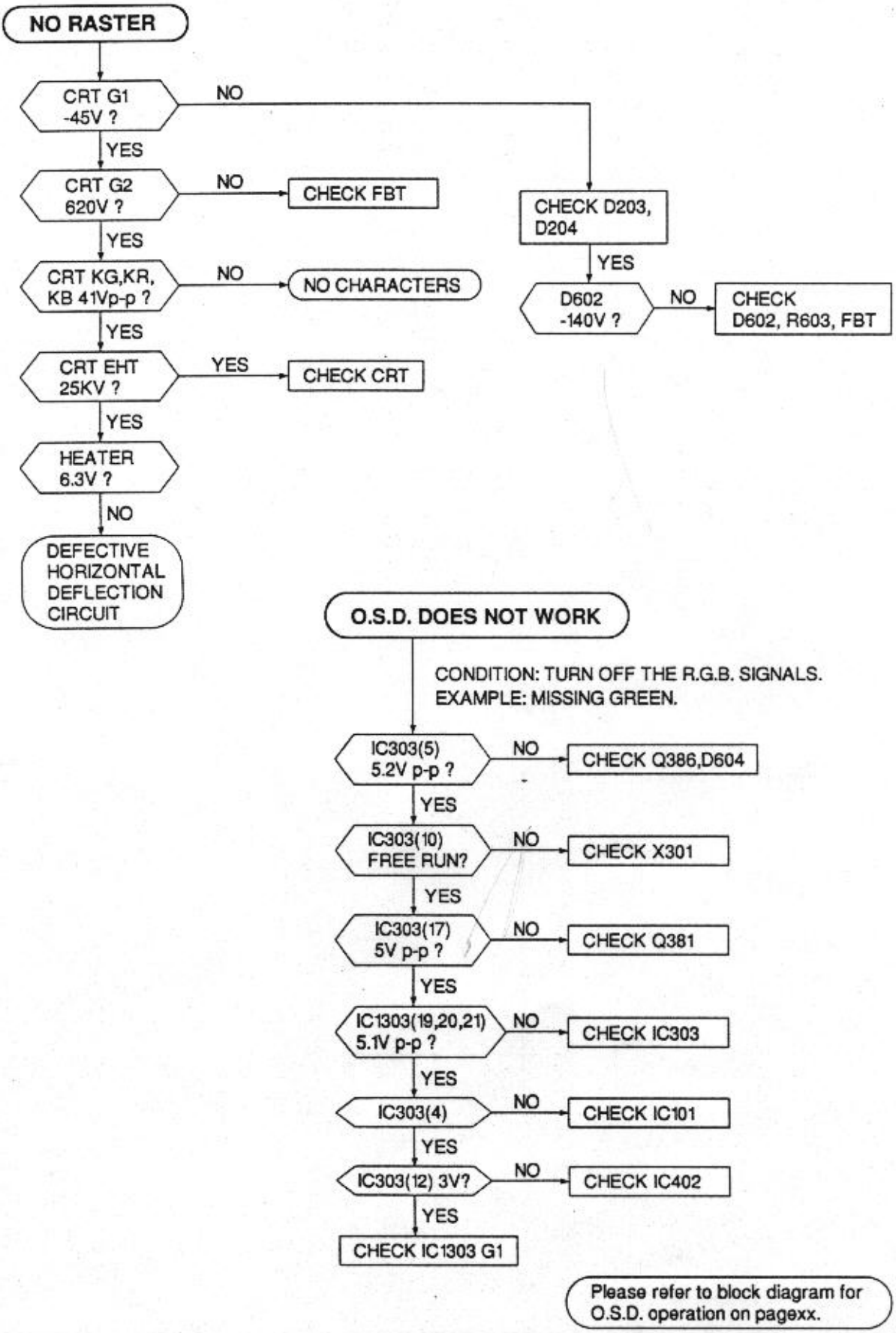
INCORRECT H. SIZE CONTROL



INCORRECT V. POSITION CONTROL




• NO CHARACTERS
• MISSING ONE COLOR
EXAMPLE: GREEN MISSING
CRT KG 42Vp-p?
NO
NO RASTER
YES
IC1302 (2,7,9) 12V ? (10,11) 80V ?
NO
CHECK IC302,D385, D386,R861
YES
IC1301 (5,8,11) 12V ?
NO
CHECK INPUT SIGNAL
YES
IC301(15) CLAMP 5V?
NO
CHECK IC901(22),Q203
YES
IC301 (6,9,22,) 12V ?
NO
CHECK 12V LINE
YES
IC303(6) 5V ?
NO
CHECK Q381
YES
CHECK IC303


NO RASTER
CRT G1 -45V ?
NO
YES
CRT G2 620V ?
NO
CHECK FBT
YES
CRT KG,KR, KB 41Vp-p ?
NO
NO CHARACTERS
YES
CRT EHT 25KV ?
YES
CHECK CRT
YES
HEATER 6.3V ?
NO
DEFECTIVE HORIZONTAL DEFLECTION CIRCUIT
CHECK D203, D204
YES
D602 -140V ?
NO
CHECK D602, R603, FBT
O.S.D. DOES NOT WORK
CONDITION: TURN OFF THE R.G.B. SIGNALS.
EXAMPLE: MISSING GREEN.
IC303(5) 5.2V p-p ?
NO
CHECK Q386,D604
YES
IC303(10) FREE RUN?
NO
CHECK X301
YES
IC303(17) 5V p-p ?
NO
CHECK Q381
YES
IC1303(19,20,21) 5.1V p-p ?
NO
CHECK IC303
YES
IC303(4)
NO
CHECK IC101
YES
IC303(12) 3V?
NO
CHECK IC402
YES
CHECK IC1303 G1
Please refer to block diagram for O.S.D. operation on pagexx.

REPLACEMENT PARTS LIST

Important Safety Notice

Components identified by the international symbol △ have special characteristics that are important for safety. When replacing any of these components use only manufacture's specified parts.

RESISTOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Carbon	F	± 1 %
F	Fuse	J	± 5 %
M	Metal Oxide	K	± 10 %
S	Solid	M	± 20 %
G	Wire Wound	G	± 2 %
V	Vaviable Res.		
T	Thick Film Chip Resistor		

Part No. Description
Example: ERDS1TJ104TD © 100 KΩ Ⓙ 1/4W

CAPACITOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Ceramic	C	± 0.25 pF
E	Electrolytic	D	± 0.5 pF
P	Polyester	F	± 1 pF
S	Styrol	J	± 5 %
T	Tantalum	K	± 10 %
PP	Polypropylene Chip	L	± 15 %
		M	± 20 %
CC	Chip Ceramic	P	+100 % -0 %
		Z	+80 % -20 %

Part No. Description
Example: ECQM1H104JZ3M Ⓟ 0.01 uF Ⓙ 50V

REF. NO.	PART NO.	DESCRIPTION
	CABINET & MAIN PARTS	
	M-8080001	3-BIRD LOGO
△	M36KUT23XX22	C.R.T (15")
△	TBM4C479B	MODEL NO. PLATE(1569GS-3A)
△	TBM4C478B	MODEL NO. PLATE(1569GS-3E)
△	TBM4C477B	MODEL NO. PLATE(1569GS-3M)
	TBX4C0034-1	SW. KNOB
	TBXA02001T-1	CONTROL KNOB
	TES4C0026	SW. SPRING
	THT4C0001	SCREW
	THT954	SCREW
△	TKE4C3101	FRONT CABINET
△	TKK4C0014-1	CENTER POST
	TKK4C0055	SIGNAL CABLE CASE
	TKK859979-2T	PEDESTAL
	TKKC5010T-1	LED BAR
△	TKU4C1601	BACK COVER
	TKX861801	CRT PCB HOLDER
△	TKYA01200-1	BASE
△	TLK4C65914C	DEGAUSS COIL
	TMK4C0048	SET LEG
	TMK84549	REMALLOY(L)
	TMKG001T	GUM
	TMM15404-1	SPACER RING
	TMM4C0041	CLIP
	TMM4C0058	SUPPORT
	TMM82532-1	CRT GUM
	TNP4C60045-23	CRT PCB (W/ COMPONMENTS)
	TNP4C69044-22	MAIN PCB (W/ COMPONMENTS)
	TPC4C0416	PACKING CASE
	TPE4C0020-2	SET COVER
	TPE814068	BAG
△	TQB4C0208A-1	O/I
	TQD4C0020-1	PM. SOFTWARE SHEET BAG
	TQD4C0021-1	PM. SOFTWARE SHEET
	TQF4C0295	WARNING LABEL
	TQF4C0494	BAR CODE (1569GS-3A)
	TQF4C0493	BAR CODE (1569GS-3E)
	TQF4C0491	BAR CODE (1569GS-3M)
	TSM4C6201-3	DISK
△	TSX4C6108-4	AC CORD (1569GS-3A)
△	TSX4C6143-4	AC CORD (1569GS-3E/3M)
△	TSX4C6258-1	SIGNAL CABLE
△	TSX4C6259-1	SIGNAL CABLE
	TUC4C0121	RADITOR
	TUX4C0102-1	REAR METAL
	TUX4C0107	BOTTOM
	TUX4C0110L	PCB FIXING METAL(L)
	TUX4C0110R	PCB FIXING METAL(R)
	TUX80775	SIGNAL CABLE FIXING METAL
	TXA3A31563	CRT KNIT WIRE
	TXAJT2P21562	2P CONNECTOR
	TXAPD4T1563	CUSHION
	XTN5+15G	SCREW
	XTW3+8L	SCREW
	XYA4+EF6	SCREW
	XYA4+EF8	SCREW

REF. NO.	PART NO.	DESCRIPTION					REF. NO.	PART NO.	DESCRIPTION				
	CAPACITORS						C365	ECKR1H103ZF1P	C	0.01	uF	Z	50V
							C366	ECKR1H103ZF1P	C	0.01	uF	Z	50V
C101	ECQV1H105JZ3	P	1	uF	J	50V	C367	ECKR1H103ZF1P	C	0.01	uF	Z	50V
C102	ECQM1H154JZBM	P	0.15	uF	J	50V	C368	ECEA1CTK101BJ	E	100	uF		16V
C103	ECEA1ETK100BJ	E	10	uF		25V	C369	ECQM1H103JZ3M	P	0.01	uF	J	50V
C110	ECUV1H330JCNW	C	33	pF	J	50V	C370	ECEA1ETK100BJ	E	10	uF		25V
C111	ECUV1H103KBNW	CC	0.01	uF	K	50V	C371	ECKR1H103ZF1P	C	0.01	uF	Z	50V
C112	ECUV1H103KBNW	CC	0.01	uF	K	50V	C372	ECUV1H103KBNW	C	0.01	uF	K	50V
C114	ECUV1H103KBNW	CC	0.01	uF	K	50V	C373	ECUV1H101KBNW	C	100	pF	K	50V
C115	ECUV1H103KBNW	CC	0.01	uF	K	50V	C374	ECUV1H101KBNW	C	100	pF	K	50V
C116	ECUV1H470JCNW	CC	47	pF	J	50V	C375	ECKR1H103ZF1P	C	0.01	uF	Z	50V
C117	ECQE1564KZBM	P	0.56	uF	K	100V	C376	ECEA1ETK100BJ	E	10	uF		25V
C140	ECQM1H103JZ3M	P	0.01	uF	J	50V	C377	ECCR1H220JC1P	C	22	pF	J	50V
C141	ECEA1ETM471BJ	E	470	uF		25V	C378	ECCR1H220JC1P	C	22	pF	J	50V
C142	ECQM1H104JZ3M	P	0.1	uF	J	50V	C379	ECEA1ETK100BJ	E	10	uF		25V
C143	ECQM1H223JZ3M	P	0.022	uF	J	50V	C381	ECEA1HTK2R2BJ	E	2.2	uF		50V
C144	ECQM1274JZBM	P	0.27	uF	J	100V	C382	ECQE1103JFBM	P	0.01	uF	J	100V
C145	ECQM1H104JZ3M	P	0.1	uF	J	50V	C384	ECKR1H103ZF1P	C	0.01	uF	Z	50V
C146	ECCR1H681JG1P	C	680	pF	J	50V	C385	ECKR1H103ZF1P	C	0.01	uF	Z	50V
C147	ECEA1CTM471BJ	E	470	uF		16V	C387	ECEA2CTK101EJ	E	100	uF		160V
C148	ECQM1H224JZBM	P	0.22	uF	J	50V	C388	ECUV1H103KBNW	C	0.01	uF	K	50V
C149	ECEA1VTK101BJ	E	100	uF		35V	C391	ECKR2H472KB1P	C	4700	pF	K	500V
C150	ECKR1H102KB1P	C	1000	pF	K	50V	C392	ECKR3A152KB1P	C	1500	pF	K	1000V
C202	ECQM1H104JZBM	P	0.1	uF	J	50V	C393	ECKR3A152KB1P	C	1500	pF	K	1000V
C203	ECQE2104KF3M	P	0.1	uF	K	200V	C394	ECEA1ETK100BJ	E	10	uF		25V
C204	ECUV1H101KBNW	C	100	pF	K	50V	C395	ECKR1H103ZF1P	C	0.01	uF	Z	50V
C301	ECEA1ETK100BJ	E	10	uF		25V	C396	ECKC2H103KB1P	C	0.01	uF	K	500V
C302	ECQM1H104JZ3M	P	0.1	uF	J	50V	C401	ECEA1CTK331BJ	E	330	uF		16V
C303	ECQE1334KZ3M	P	0.33	uF	K	100V	C402	ECQM1H104JZ3M	P	0.1	uF	J	50V
C304	ECKR2H102KB1P	C	1000	pF	K	500V	C403	ECEA1CTK101BJ	E	100	uF		16V
C305	ECQM1103KZ3M	P	0.01	uF	K	100V	C404	ECQP1H681GZ3M	P	680	pF	G	50V
C306	ECEA1ETK100BJ	E	10	uF		25V	C405	ECUV1H223KBNW	C	0.022	uF	K	50V
C321	ECEA1ETK100BJ	E	10	uF		25V	C406	ECUV1E224ZFNW	C	0.22	uF	Z	25V
C322	ECQM1H104JZ3M	P	0.1	uF	J	50V	C407	ECUV1H104ZFNW	C	0.1	uF	F	50V
C323	ECQE1334KZ3M	P	0.33	uF	K	100V	C408	ECKR1H222KB1P	C	2200	pF	K	50V
C324	ECKR2H102KB1P	C	1000	pF	K	500V	C409	ECUV1H473KBNW	C	0.047	uF	K	50V
C325	ECQM1103KZ3M	P	0.01	uF	K	100V	C410	ECEA1CTK470BJ	E	47	uF		16V
C326	ECEA1ETK100BJ	E	10	uF		25V	C411	ECUV1H103KBNW	C	0.01	uF	K	50V
C341	ECEA1ETK100BJ	E	10	uF		25V	C412	ECQM1H103JZ3M	P	0.01	uF	J	50V
C342	ECQM1H104JZ3M	P	0.1	uF	J	50V	C413	ECEA1HTK010BJ	E	10	uF		50V
C343	ECQE1334KZ3M	P	0.33	uF	K	100V	C414	ECUV1H103KBNW	C	0.01	uF	K	50V
C344	ECKR2H102KB1P	C	1000	pF	K	500V	C416	ECUV1H121KCNW	C	120	pF	K	50V
C345	ECQM1103KZ3M	P	0.01	uF	K	100V	C417	ECUV1H473KBNW	C	0.047	uF	K	50V
C346	ECEA1ETK100BJ	E	10	uF		25V	C418	ECUV1H121KCNW	C	120	pF	K	50V
C347	ECUV1H050JCNW	C	5	pF	J	50V	C419	ECCR1H220JG1P	C	22	pF	J	50V
C351	ECEA1ETK100BJ	E	10	uF		25V	C420	ECUV1H222KBNW	C	2200	pF	K	50V
C352	ECEA1ETK100BJ	E	10	uF		25V	C421	ECUV1H470JCNW	CC	47	pF	J	50V
C353	ECEA1ETK100BJ	E	10	uF		25V	C422	ECUV1H103KBNW	CC	0.01	uF	K	50V
C354	ECEA1ETK100BJ	E	10	uF		25V	C424	ECEA1ETK470BJ	E	47	uF		25V
C355	ECCR1H470JC1P	C	47	pF	J	50V	C430	ECUV1H103KBNW	C	0.01	uF	K	50V
C356	ECCR1H470JC1P	C	47	pF	J	50V	C551	ECKR2H392KB1P	C	3900	pF	K	500V
C360	ECCR1H151JG1P	C	150	pF	J	50V	C552	ECWH12H332JZBM	P	3300	pF	J	1250V
C361	ECQM1H103JZ3M	P	0.01	uF	J	50V	C554	ECQF6822JZ3M	P	6800	pF	J	600V
C362	ECEA1ETK100BJ	E	10	uF		25V	C556	ECKR2H391KB1P	C	390	pF	K	500V
C363	ECQM1H104JZ3M	P	0.1	uF	J	50V	C557	ECQE2224KZ3M	P	0.22	uF	K	200V
C364	ECKR1H103ZF1P	C	0.01	uF	Z	50V	C558	ECKR1H102KB1P	C	1000	pF	K	50V

REF. NO.	PART NO.	DESCRIPTION			REF. NO.	PART NO.	DESCRIPTION			
C559	ECEA1ETK471BJ	E	470 uF	25V	C887	ECQE2223JZ3M	P	0.022 uF	J	200V
C560	ECWF4364JZB	P	0.36 uF	J 400V	C901	ECEA1ETK100BJ	E	10 uF		25V
C562	ECWF2224JZBM	P	0.22 uF	J 200V	C902	ECEA1ETK100BJ	E	10 uF		25V
C563	ECWF2824JZBM	P	0.82 uF	J 200V	C903	ECEA1ETK100BJ	E	10 uF		25V
C564	ECQM1H473JZ3M	P	0.047 uF	J 50V	C904	ECEA1ETK100BJ	E	10 uF		25V
C566	ECEA1ETK471BJ	E	470 uF	25V	C905	ECEA1ETK100BJ	E	10 uF		25V
C567	ECKR2H221KB1P	C	220 pF	K 500V	C906	ECEA1ETK100BJ	E	10 uF		25V
C568	ECKR2H221KB1P	C	220 pF	K 500V	C907	ECEA1ETK100BJ	E	10 uF		25V
C570	ECQM1H104JZ3M	P	0.1 uF	J 50V	C908	ECEA1ETK100BJ	E	10 uF		25V
C571	ECQM1H104JZ3M	P	0.1 uF	J 50V	C909	ECEA1ETK100BJ	E	10 uF		25V
C573	ECWH12H152JZ3M	P	1500 pF	J 1200V	C910	ECEA1ETK100BJ	E	10 uF		25V
C580	ECCR1H471JG1P	C	470 pF	J 50V	C911	ECEA1ETK100BJ	E	10 uF		25V
C581	ECKR2H102KB1P	C	1000 pF	K 500V	C912	ECUV1H121JCNW	C	120 pF	J	50V
C582	ECQE1475JZBM	P	4.7 uF	J 100V	C913	ECEA1ETK100BJ	E	10 uF		25V
C601	ECEA1HTK010BJ	E	1 uF	50V	C914	ECQM1H103JZ3M	P	0.01 uF	J	50V
C602	ECEA2CTK100BJ	E	10 uF	160V	C915	ECCR1H150JC1P	C	15 pF	J	50V
C603	ECEA2ATK220BJ	E	22 uF	100V	C916	ECCR1H150JC1P	C	15 pF	J	50V
C604	ECEA1HTK3R3BJ	E	3.3 uF	50V	C919	ECEA1ETK100BJ	E	10 uF		25V
C605	ECEA1HTK010BJ	E	1 uF	50V	C924	ECEA1CTK470BJ	E	47 uF		16V
C607	ECEA1HTK100BJ	E	10 uF	50V	C925	ECQM1H103JZ3M	P	0.01 uF	J	50V
C608	ECEA2CTK100BJ	E	10 uF	160V	C926	ECEA1ETK100BJ	E	10 uF		25V
C701	ECEA1ETK100BJ	E	10 uF	25V	C931	ECUV1C225ZFND	CC	2.2 uF	Z	16V
C702	ECEA1ETK100BJ	E	10 uF	25V	C932	ECQM1H104JZ3M	P	0.1 uF	J	50V
C703	ECUV1H104ZFNW	C	0.1 uF	F 50V						
C705	ECEA1ETK100BJ	E	10 uF	25V						
△C800	ECQU2A334MNFT	P	0.33 uF	M 250V						
△C803	ECKMNS472MFJP	C	4700 pF	M 400V						
△C804	ECKMNS472MFJP	C	4700 pF	M 400V						
C810	ECOS2GGM331EE	E	330 uF	400V		DIODES				
C811	ECEA1ETK101BJ	E	100 uF	25V						
C818	ECQE6473JZ3M	P	0.047 uF	J 600V	D101	1N4001TB52	DIODE			
C820	ECQM1H104JZ3M	P	0.1 uF	J 50V	D102	MTZJ5R1BT77	ZENER DIODE			
C821	ECQM1H104JZ3M	P	0.1 uF	J 50V	D202	MTZJ5R1BT77	ZENER DIODE			
C823	ECKR1H222KB1P	C	2200 pF	K 50V	D203	HZT33-09TD	DIODE			
C824	ECQM1H102JZ3M	P	1000 pF	J 50V	D204	HZT33-09TD	DIODE			
C828	ECQM1H103JZ3M	P	0.01 uF	J 50V	D301	1N4148TB26	DIODE			
△C831	ECKMNS472MFJP	C	4700 pF	M 400V	D302	1N4148TB26	DIODE			
△C832	ECKMNS472MFJP	C	4700 pF	M 400V	D303	MA167ATA5	DIODE			
C833	ECEA1CTK470BJ	E	47 uF	16V	D321	1N4148TB26	DIODE			
C852	ECKR1H332KB1P	C	3300 pF	K 50V	D322	1N4148TB26	DIODE			
C861	ECEA2ATM221EJ	E	220 uF	100V	D323	MA167ATA5	DIODE			
C862	ECEA2CGE101E	E	100 uF	160V	D341	1N4148TB26	DIODE			
C863	ECEA1VTM222EJ	E	2200 uF	35V	D342	1N4148TB26	DIODE			
C864	ECEA1ETM102EJ	E	1000 uF	25V	D343	MA167ATA5	DIODE			
C865	ECEA1CTK222EJ	E	2200 uF	16V	D361	MTZJ15BT77	ZENER DIODE			
C866	ECEA1ETK100BJ	E	10 uF	25V	D362	MTZJ15BT77	ZENER DIODE			
C867	ECQM1H104JZ3M	P	0.1 uF	J 50V	D371	MA29WATA	DIODE			
C868	ECEA1CTK102EJ	E	1000 uF	16V	D381	MA29WATA	DIODE			
C869	ECEA1ETK100BJ	E	10 uF	25V	D382	MTZJ4R7BT77	ZENER DIODE			
C870	ECEA1ETK100BJ	E	10 uF	25V	D383	1N4148TB26	DIODE			
C871	ECEA1CTK221BJ	E	220 uF	16V	D384	1N4148TB26	DIODE			
C872	ECEA1CTM331BJ	E	330 uF	16V	D385	BZX85C6V2	DIODE			
C883	ECKR1H121JG1P	C	120 pF	K 50V	D386	BZX85C6V2	DIODE			
C884	ECEA2DTK101EJ	E	100 uF	200V	D401	MA700TA	DIODE			
C885	ECEA2DTK101EJ	E	100 uF	200V	D403	MTZJ15BT77	ZENER DIODE			
C886	ECKR2H221KB1P	C	220 pF	K 500V	D404	1N4148TB26	DIODE			

REF. NO.	PART NO.	DESCRIPTION
D405	MA29ATA	DIODE
D406	1N4148TB26	DIODE
D551	5TUZ47	DIODE
D552	RG2ALFC4-H	DIODE
D554	11DQ04TA2	DIODE
D556	MTZJ15BT77	ZENER DIODE
D558	10DF6-TA2	DIODE
D560	10DF6-TA2	DIODE
D561	HER303E-3	DIODE
D562	1N4148TB26	DIODE
D563	RG2ALFC4-H	DIODE
D564	HER303E-3	DIODE
D571	EU02AV1-H	DIODE
D572	EU02AV1-H	DIODE
D580	MA29ATA	DIODE
D601	1N4148TB26	DIODE
D602	10DF2-TA2	DIODE
D603	1N4148TB26	DIODE
D604	MTZJ5R1BT77	ZENER DIODE
D605	15DF4TA2	DIODE
D606	1N4148TB26	DIODE
D610	MA700TA	DIODE
D701	MA29WATA	DIODE
△D801	RBV406MLFA	DIODE(RBV-406M)
D802	EM01ZV0-H	DIODE
D803	EM01ZV0-H	DIODE
D805	RG2A2LFA1-H	DIODE
D806	FR103TB52	DIODE
D814	MTZJ10BT77	ZENER DIODE
D824	MTZJ5R1BT77	ZENER DIODE
D830	MTZJ20BT77	ZENER DIODE
D850	MTZJ6R8BT77	ZENER DIODE
D861	31DF6HC(A)	DIODE
D862	RG2A2LFC4-H	DIODE RG2A2
D863	HER303E-3	DIODE
D864	HER303E-3	DIODE
D865	31DF2HC(A)	DIODE
D870	HER303E-3	DIODE
D871	MTZJ6R2BT77	ZENER DIODE
D872	MTZJ6R8BT77	ZENER DIODE
D873	MTZJ8R2AT77	ZENER DIODE
D884	ECKR1H392KB1P	C 3900 PF K 50V
D886	31DF2HC(A)	DIODE
D913	MTZJ5R6BT77	ZENER DIODE
D914	MTZJ5R6BT77	ZENER DIODE
D915	L-59EGW	LED
D920	MTZJ5R6BT77	ZENER DIODE
D921	MTZJ5R6BT77	ZENER DIODE
D922	MTZJ5R6BT77	ZENER DIODE
D923	MTZJ5R6BT77	ZENER DIODE
D927	1SS133T77	DIODE
D928	1SS133T77	DIODE
D929	1SS133T77	DIODE
D961	MTZJ5R6BT77	ZENER DIODE
D962	MTZJ5R6BT77	ZENER DIODE

REF. NO.	PART NO.	DESCRIPTION
	I.C	
IC101	TDA8172	IC (7 PIN)
IC301	LM1281N	IC (28 PIN)
IC302	CVA2415T	IC (11 PIN)
IC303	STV9422P	IC (20 PIN)
IC401	TDA9103	IC (42 PIN)
IC402	LM324DT	OP-AMP IC (14 PIN)
IC552	LM324DT	OP-AMP IC (14 PIN)
IC701	UPC1406HA	IC (9 PIN)
IC801	UC3842N	IC (8 PIN)
IC862	L78LR05C-MA	IC (4 PIN)
IC901	ST72T71	IC (56 PIN)
IC902	24LC21IP	IC (8 PIN)
	COILS	
J317	EXCELDR35V	COIL
J318	EXCELDR35V	COIL
J319	EXCELDR35V	COIL
J802	EXCELDR35V	COIL
J855	EXCELDR35V	COIL
L301	TLTR56K186T	COIL
L321	TLTR68K186T	COIL
L341	TLTR47K186T	COIL
L370	TLT100K186T	COIL
L371	TLT100K186T	COIL
L372	TLT221K186T	COIL
L380	TLTR47K186T	COIL
L381	TLTR47K186T	COIL
L382	TLTR47K186T	COIL
L385	EXCELDR35V	COIL
L386	EXCELDR35V	COIL
L388	EXCELDR35V	COIL
L389	EXCELDR35V	COIL
L391	TLT100K186T	COIL
L401	TLT100K186T	COIL
L551	EXCELDR35V	COIL
△L553	TLH4C65634Y	H. LIN COIL
△L554	TLH85807Y	CHOKE COIL
△L555	TLH4C65927Y	BRIDGE COIL
L601	SPT0406A102K	COIL
△L801	TLP4C65537D	LINE FILTER
△L802	TLP4C65537D	LINE FILTER
L805	EXCELDR35V	COIL
L810	EXCELDR35V	COIL
L862	EXCELDR35V	COIL
L864	EXCELDR35V	COIL
L865	EXCELDR35V	COIL
L870	EXCELDR35V	COIL
L871	TLT100K186T	COIL

REF. NO.	PART NO.	DESCRIPTION
	TRANSISTORS	
Q101	H945PTZ	TRANSISTOR
Q201	2SA1123QRTA	TRANSISTOR
Q202	H945PTZ	TRANSISTOR
Q203	H945PTZ	TRANSISTOR
Q301	2SC1921TZ	TRANSISTOR
Q302	2SA1123QRTA	TRANSISTOR
Q321	2SC1921TZ	TRANSISTOR
Q322	2SA1123QRTA	TRANSISTOR
Q341	2SC1921TZ	TRANSISTOR
Q342	2SA1123QRTA	TRANSISTOR
Q381	H945PTZ	TRANSISTOR
Q384	2SA733QR-T	TRANSISTOR
Q385	2SC3811QRTA	TRANSISTOR
Q386	2SC3811QRTA	TRANSISTOR
Q403	KRC102MAT	TRANSISTOR
Q551	2SC5129	TRANSISTOR
Q552	2SK2105Z	TRANSISTOR
Q553	YTAF630	F.E.T.
Q554	YTAF630	F.E.T.
Q555	2SD2374QRL	TRANSISTOR
Q556	2SB1322AQRTA	TRANSISTOR
Q557	KRC102MAT	TRANSISTOR
Q558	KRC102MAT	TRANSISTOR
Q559	2SD669AWC	TRANSISTOR
Q560	2SB649AC	TRANSISTOR
Q561	2SD1264ALBP	TRANSISTOR
Q562	KRC102MAT	TRANSISTOR
Q563	KRC102MAT	TRANSISTOR
Q564	2SK1507-91M	F.E.T
Q565	KRC102MAT	TRANSISTOR
Q801	2SK1404	MOS F.E.T(K1404)
Q802	KRC102MAT	TRANSISTOR
Q803	2SA733QR-T	TRANSISTOR
Q804	2SC4620V25T2	TRANSISTOR
Q806	2SA733QR-T	TRANSISTOR
Q807	2SA733QR-T	TRANSISTOR
Q808	H945PTZ	TRANSISTOR
Q850	H945PTZ	TRANSISTOR
Q851	H945PTZ	TRANSISTOR
Q862	2SA733QR-T	TRANSISTOR
Q863	2SC1162CD	TRANSISTOR
Q864	KRC102MAT	TRANSISTOR
Q865	2SB649AC	TRANSISTOR
Q866	KRC102MAT	TRANSISTOR
Q867	2SB857WC	TRANSISTOR
Q868	H945PTZ	TRANSISTOR
Q869	KRC102MAT	TRANSISTOR
Q881	KRC102MAT	TRANSISTOR
Q882	KRC102MAT	TRANSISTOR
Q883	2SD1992AQRTA	TRANSISTOR
Q884	2SB1321AQRTA	TRANSISTOR
Q885	2SK1917-M	MOS F.E.T
Q901	KRA102MAT	TRANSISTOR
Q903	KRC102MAT	TRANSISTOR
Q904	KRC102MAT	TRANSISTOR

REF. NO.	PART NO.	DESCRIPTION
	RESISTORS	
J216	ERJ6GEY0R00VT	T 0 Ω 1/10W
J218	ERJ6GEY0R00VT	T 0 Ω 1/10W
J219	ERJ6GEY0R00VT	T 0 Ω 1/10W
J220	ERJ6GEY0R00VT	T 0 Ω 1/10W
J256	ERJ6ENF1242VT	T 12.4KΩ F 1/10W
J278	ERJ6GEY0R00VT	T 0 Ω 1/10W
J281	ERJ6GEY0R00VT	T 0 Ω 1/10W
J297	ERJ6GEY0R00VT	T 0 Ω 1/10W
J430	ERJ6GEY0R00VT	T 0 Ω 1/10W
J877	ERJ6GEY0R00VT	T 0 Ω 1/10W
J878	ERJ6GEY0R00VT	T 0 Ω 1/10W
J890	ERJ6GEY0R00VT	T 0 Ω 1/10W
J922	ERJ6GEY0R00VT	T 0 Ω 1/10W
L387	ERDS1TJ391TT	C 390 Ω J 1/2W
R101	ERJ6GEYJ272VT	T 2.7KΩ J 1/10W
R102	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R103	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R104	ERJ6GEYJ563VT	T 56KΩ J 1/10W
R105	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R106	ERJ6GEYJ563VT	T 56KΩ J 1/10W
R107	ERJ6GEYJ823VT	T 82KΩ J 1/10W
R108	ERJ6GEYJ563VT	T 56KΩ J 1/10W
R109	ERJ6GEYJ102VT	T 1KΩ J 1/10W
R111	ERJ6ENF2051VT	T 2.05KΩ F 1/10W
R113	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R117	ERD25TJ103TT	C 10KΩ J 1/4W
R120	ERJ6GEYJ123VT	T 12KΩ J 1/10W
R121	ERJ6GEYJ332VT	T 3.3KΩ J 1/10W
R122	ERJ6GEYJ183VT	T 18KΩ J 1/10W
R123	ERDS2TJ822TT	C 8.2KΩ J 1/4W
R140	ERJ6GEY0R00VT	T 0 Ω 1/10W
R141	ERDS1TJ333TT	C 33KΩ J 1/2W
R142	ERDS2TJ183TT	C 18KΩ J 1/4W
R143	ERJ6GEYJ1R0VT	T 1 Ω J 1/10W
R144	ERG1SJ301PK	M 300 Ω J 1W
R145	ERX1SJ1R0PK	M 1 Ω J 1W
R146	ERD25TJ471TT	C 470 Ω J 1/4W
R147	ERJ6ENF6811VT	T 6.81KΩ F 1/10W
R148	ERD25TJ681TT	C 680 Ω J 1/4W
R149	ERJ6GEYJ392VT	T 3.9KΩ J 1/10W
R202	ERJ6ENF1201VT	T 1.2KΩ F 1/10W
R203	ERJ6ENF2202VT	T 22KΩ F 1/10W
R204	ERJ6ENF2202VT	T 22KΩ F 1/10W
R205	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R206	ERJ6ENF1152VT	T 11.5KΩ F 1/10W
R207	ERDS2TJ102TT	C 1KΩ J 1/4W
R208	ERDS2TJ104TT	C 100KΩ J 1/4W
R210	ERJ6GEYJ392VT	T 3.9KΩ J 1/10W
R211	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W

REF. NO.	PART NO.	DESCRIPTION				REF. NO.	PART NO.	DESCRIPTION			
R212	ERDS2TJ223TT	C	22KΩ	J	1/4W	R368	ERD25TJ331TT	C	330 Ω	J	1/4W
R214	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R369	EROS2TKF3302T	M	33KΩ	F	1/4W
R215	ERJ6GEYJ223VT	T	22KΩ	J	1/10W	R370	EROS2TKF5601T	M	5.6KΩ	F	1/4W
R216	ERJ6GEYJ472VT	T	4.7KΩ	J	1/10W	R371	ERDS2TJ101TT	C	100 Ω	J	1/4W
R217	ERD25TJ222TT	C	2.2KΩ	J	1/4W	R372	ERD25TJ101TT	C	100 Ω	J	1/4W
R218	ERDS1TJ681TT	C	680 Ω	J	1/2W	R373	ERDS2TJ101TT	C	100 Ω	J	1/4W
R301	EROS2TKF75R0T	M	75 Ω	F	1/4W	R374	ERD25TJ151TT	C	150 Ω	J	1/4W
R302	ERDS1TJ330TT	C	33 Ω	J	1/2W	R375	ERJ6ENF2201VT	T	2.2KΩ	F	1/10W
R303	ERD25TJ391TT	C	390 Ω	J	1/4W	R376	ERJ6ENF2702VT	T	27KΩ	F	1/10W
R304	ERD25TJ681TT	C	680 Ω	J	1/4W	R377	ERJ6GEYJ104VT	T	100KΩ	J	1/10W
R305	ERD25TJ102TT	C	1KΩ	J	1/4W	R378	ERJ6GEYJ104VT	T	100KΩ	J	1/10W
R306	ERDS1TJ330TT	C	33 Ω	J	1/2W	R379	ERJ6GEYJ104VT	T	100KΩ	J	1/10W
R307	ERDS1TJ103TT	C	10KΩ	J	1/2W	R381	ERDS1TJ103TT	C	10KΩ	J	1/2W
R309	ERJ6GEYJ224VT	T	220KΩ	J	1/10W	R382	ERDS1TJ151TT	C	150 Ω	J	1/2W
R310	ERDS2TJ223TT	C	22KΩ	J	1/4W	R384	ERJ6GEYJ561VT	T	560 Ω	J	1/10W
R311	ERDS2TJ103TT	C	10KΩ	J	1/4W	R385	ERJ6GEYJ101VT	T	100 Ω	J	1/10W
R312	ERJ6GEY0R00VT	T	0 Ω		1/10W	R386	ERJ6GEYJ101VT	T	100 Ω	J	1/10W
R313	ERJ6GEYJ101VT	T	100 Ω	J	1/10W	R387	ERJ6GEYJ102VT	T	1KΩ	J	1/10W
R321	EROS2TKF75R0T	M	75 Ω	F	1/4W	R389	ERDS2TJ470TT	C	47 Ω	J	1/4W
R322	ERDS1TJ330TT	C	33 Ω	J	1/2W	R390	ERJ6GEYJ102VT	T	1KΩ	J	1/10W
R323	ERD25TJ391TT	C	390 Ω	J	1/4W	R391	ERJ6GEYJ103VT	T	10KΩ	J	1/10W
R324	ERD25TJ681TT	C	680 Ω	J	1/4W	R392	ERD25TJ224TT	C	220KΩ	J	1/4W
R325	ERD25TJ102TT	C	1KΩ	J	1/4W	R393	ERDS2TJ561TT	C	560 Ω	J	1/4W
R326	ERDS1TJ330TT	C	33 Ω	J	1/2W	R394	ERDS2TJ472TT	C	4.7KΩ	J	1/4W
R327	ERDS1TJ103TT	C	10KΩ	J	1/2W	R395	ERDS2TJ102TT	C	1KΩ	J	1/4W
R329	ERDS2TJ224TT	C	220KΩ	J	1/4W	R396	ERJ6GEYJ221VT	T	220 Ω	J	1/10W
R330	ERDS2TJ223TT	C	22KΩ	J	1/4W	R397	ERJ6GEYJ102VT	T	1KΩ	J	1/10W
R331	ERDS2TJ103TT	C	10KΩ	J	1/4W	R399	ERJ6GEYJ222VT	T	2.2KΩ	J	1/10W
R333	ERJ6GEYJ101VT	T	100 Ω	J	1/10W	R401	ERJ6GEYJ822VT	T	8.2KΩ	J	1/10W
R336	ERJ6GEY0R00VT	T	0 Ω		1/10W	R402	ERJ6GEYJ393VT	T	39KΩ	J	1/10W
R337	ERJ6GEYJ470VT	T	47 Ω	J	1/10W	R403	ERD25TJ103TT	C	10KΩ	J	1/4W
R338	ERJ6GEYJ470VT	T	47 Ω	J	1/10W	R408	ERJ6ENF7501VT	T	7.5KΩ	F	1/10W
R339	ERJ6GEYJ470VT	T	47 Ω	J	1/10W	R409	ERJ6GEYJ102VT	T	1KΩ	J	1/10W
R341	EROS2TKF75R0T	M	75 Ω	F	1/4W	R410	ERJ6GEYJ393VT	T	39KΩ	J	1/10W
R342	ERDS1TJ330TT	C	33 Ω	J	1/2W	R412	ERJ6ENF1242VT	T	12.4KΩ	F	1/10W
R343	ERD25TJ391TT	C	390 Ω	J	1/4W	R413	ERJ6ENF3902VT	T	39K Ω	F	1/10W
R344	ERD25TJ681TT	C	680 Ω	J	1/4W	R414	ERJ6ENF1202VT	T	12KΩ	F	1/10W
R345	ERD25TJ102TT	C	1KΩ	J	1/4W	R415	ERJ6ENF1742VT	T	17.4KΩ	F	1/10W
R346	ERDS1TJ221TT	C	220 Ω	J	1/2W	R416	ERJ6GEYJ472VT	T	4.7KΩ	J	1/10W
R347	ERDS1TJ103TT	C	10KΩ	J	1/2W	R417	ERJ6ENF2211VT	T	2.21KΩ	F	1/10W
R349	ERD25TJ224TT	C	220KΩ	J	1/4W	R418	ERJ6GEYJ821VT	T	820 Ω	J	1/10W
R350	ERDS2TJ223TT	C	22KΩ	J	1/4W	R419	ERDS2TJ333TT	C	33KΩ	J	1/4W
R351	ERD25TJ103TT	C	10KΩ	J	1/4W	R420	ERJ6GEYJ125VT	T	1.2MΩ	J	1/10W
R353	ERJ6GEYJ101VT	T	100 Ω	J	1/10W	R421	ERJ6GEYJ103VT	T	10KΩ	J	1/10W
R355	ERDS2TJ102TT	C	1KΩ	J	1/4W	R422	ERD25TJ102TT	C	1KΩ	J	1/4W
R356	ERDS2TJ102TT	C	1KΩ	J	1/4W	R423	ERDS2TJ562TT	C	5.6KΩ	J	1/4W
R357	ERD25TJ103TT	C	10KΩ	J	1/4W	R424	ERJ6GEYJ100VT	T	10 Ω	J	1/10W
R358	ERDS2TJ103TT	C	10KΩ	J	1/4W	R425	ERJ6ENF1022VT	T	10.2KΩ	F	1/10W
R359	ERDS2TJ103TT	C	10KΩ	J	1/4W	R426	ERJ6ENF4702VT	T	47KΩ	F	1/10W
R361	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R427	ERJ6GEYJ183VT	T	18KΩ	J	1/10W
R362	ERD25TJ103TT	C	10KΩ	J	1/4W	R428	ERD25TJ224TT	C	220KΩ	J	1/4W
R363	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R429	ERD25TJ222TT	C	2.2KΩ	J	1/4W
R364	ERJ6GEYJ103VT	T	10KΩ	J	1/10W	R430	ERJ6ENF1002VT	T	10KΩ	F	1/10W
R365	ERD25TJ103TT	C	10KΩ	J	1/4W	R431	ERJ6ENF1002VT	T	10KΩ	F	1/10W
R366	ERDS2TJ392TT	C	3.9KΩ	J	1/4W	R432	EROS2TKF5601T	M	5.6KΩ	F	1/4W
R367	ERDS2TJ681TT	C	680 Ω	J	1/4W	R433	ERJ6GEYJ103VT	T	10KΩ	J	1/10W

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
R434	ERJ6GEYJ153VT	T 15KΩ J 1/10W	R713	ERJ6GEY0R00VT	T 0 Ω 1/10W
R435	ERJ6GEYJ273VT	T 27KΩ J 1/10W	R714	ERJ6GEYJ682VT	T 6.8KΩ J 1/10W
R437	ERJ6GEYJ563VT	T 56KΩ J 1/10W	R715	ERJ6ENF1212VT	T 12.1KΩ F 1/10W
R438	ERJ6GEYJ123VT	T 12KΩ J 1/10W	R716	ERJ6ENF3901VT	T 3.9KΩ F 1/10W
R550	ERG2SJ270PK	M 27 Ω J 2W	R717	ERJ6GEYJ393VT	T 39KΩ J 1/10W
R551	ERDS1TJ470TT	C 47 Ω J 1/2W	R718	ERJ6GEYJ333VT	T 33KΩ J 1/10W
R552	ERDS2TJ332TT	C 3.3KΩ J 1/4W	R801	ERC12AGK394D	S 390KΩ K 1/2W
R553	ERG1SJ561PK	M 560 Ω J 1W	△R802	TRPW5B0M090DT	POSISTOR DGC3R14M
R554	ERX2SJ1R2PK	M 1.2 Ω J 2W	△R803	ERTD6FFK160MT	THERMISTOR
R555	ERX2SJ1R0PK	M 1 Ω J 2W	R804	ERG3SJ121ST	M 120 Ω J 3W
R557	ERX3SJ6R8PK	M 6.8 Ω J 3W	R808	ERDS1TJ224TT	C 220KΩ J 1/2W
R558	ERX2SJ1R5PK	M 1.5 Ω J 2W	R809	ERDS1TJ224TT	C 220KΩ J 1/2W
R560	ERDS1TJ271TT	C 270 Ω J 1/2W	R810	ERG2SJ333ST	M 33KΩ J 2W
R561	ERDS1TJ1R0TT	C 1 Ω J 1/2W	R811	ERG2SJ333ST	M 33KΩ J 2W
R562	ERX1SJ100ST	M 10 Ω J 1W	R815	ERG5SJ153ST	M 15KΩ J 5W
R563	ERDS2TJ332TT	C 3.3KΩ J 1/4W	R816	ERG1SJ220PK	M 22 Ω J 1W
R564	ERDS1TJ471TT	C 470 Ω J 1/2W	R817	ERJ6GEYJ223VT	T 22KΩ J 1/10W
R565	ERDS1TJ471TT	C 470 Ω J 1/2W	R818	ERX3SJR27PK	M 0.27 Ω J 3W
R566	ERJ6GEYJ100VT	T 10 Ω J 1/10W	R819	ERD25TJ102TT	C 1KΩ J 1/4W
R567	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W	R823	EROS2TKF8202T	M 82KΩ F 1/4W
R568	ERD25TJ100TT	C 10 Ω J 1/4W	R824	ERDS2TJ470TT	C 47 Ω J 1/4W
R569	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W	R825	ERX2SJR15PK	M 0.15 Ω J 2W
R570	ERDS1TJ472TT	C 4.7KΩ J 1/2W	R828	ERDS1TJ274TT	C 270KΩ J 1/2W
R571	ERDS1TJ472TT	C 4.7KΩ J 1/2W	R829	ERDS2TJ223TT	C 22KΩ J 1/4W
R580	ERDS2TJ222TT	C 2.2KΩ J 1/4W	R830	ERD25TJ220TT	C 22 Ω J 1/4W
R581	ERDS2TJ222TT	C 2.2KΩ J 1/4W	R831	ERDS1TJ334TT	C 330KΩ J 1/2W
R583	EROS2TKF2321T	M 2.32KΩ F 1/4W	R832	ERG1SJ224PK	M 220KΩ J 1W
R584	EROS2TKF3901T	M 3.9KΩ F 1/4W	R834	ERDS2TJ472TT	C 4.7KΩ J 1/4W
R585	EROS2TKF1801T	M 1.8KΩ F 1/4W	R835	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R586	ERJ6GEYJ393VT	T 39KΩ J 1/10W	R836	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R587	ERJ6GEYJ123VT	T 12KΩ J 1/10W	R837	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R588	ERG2SJ104PK	M 100KΩ J 2W	R838	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W
R590	ERJ6GEY0R00VT	T 0 Ω 1/10W	R839	ERJ6ENF1202VT	T 12KΩ F 1/10W
R591	ERX3SJ1R8PK	M 1.8 Ω J 3W	R850	ERD25TJ273TT	C 27KΩ J 1/4W
R600	ERDS2TJ563TT	C 56KΩ J 1/4W	R851	ERJ6GEYJ104VT	T 100KΩ J 1/10W
R601	EROS2TKF1653T	M 165KΩ F 1/4W	R852	ERJ6ENF6492VT	T 64.9KΩ F 1/10W
R602	EROS2TKF1653T	M 165KΩ F 1/4W	R853	ERJ6GEYJ104VT	T 100KΩ J 1/10W
R603	ERDS2TJ102TT	C 1KΩ J 1/4W	R854	ERJ6ENF5231VT	T 5.23KΩ F 1/10W
R604	ERDS1TJ272TT	C 2.7KΩ J 1/2W	R856	ERJ6ENF4321VT	T 4.32KΩ F 1/10W
R605	ERJ6GEYJ221VT	T 220 Ω J 1/10W	R858	ERD25TJ222TT	C 2.2KΩ J 1/4W
R607	ERDS2TJ333TT	C 33KΩ J 1/4W	△R861	ERQ12AJR47HK	F 0.47 Ω J 1/2W
R608	ERD25TJ474TT	C 470KΩ J 1/4W	R862	ERDS1TJ224TT	C 220KΩ J 1/2W
R609	ERDS1TJ101TT	C 100 Ω J 1/2W	△R863	ERQ12AJR47HK	F 0.47 Ω J 1/2W
R611	EROS2TKF1963T	M 196KΩ F 1/4W	R864	ERQ1CKPR47S	F 0.47 Ω K 1W
R612	ERDS2TJ562TT	C 5.6KΩ J 1/4W	△R865	ERQ12AJR47HK	F 0.47 Ω J 1/2W
R701	ERJ6GEYJ103VT	T 10KΩ J 1/10W	R867	ERX3SJ5R6PK	M 5.6 Ω J 3W
R702	ERJ6GEYJ153VT	T 15KΩ J 1/10W	R868	ERX1SJ1R5PK	M 1.5 Ω J 1W
R703	ERJ6GEYJ333VT	T 33KΩ J 1/10W			(1569GS-3* ONLY)
R704	ERJ6GEYJ104VT	T 100KΩ J 1/10W	R868	ERX1SJR33PK	M 0.33 Ω J 1W
R705	ERJ6GEYJ103VT	T 10KΩ J 1/10W			(TX-T1563PE1 ONLY)
R706	ERJ6GEYJ103VT	T 10KΩ J 1/10W	R869	ERDS2TJ223TT	C 22KΩ J 1/4W
R707	ERJ6GEYJ473VT	T 47KΩ J 1/10W	R870	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R708	ERJ6GEYJ683VT	T 68KΩ J 1/10W	△R871	ERQ12AJR47HK	F 0.47 Ω J 1/2W
R709	ERJ6GEYJ104VT	T 100KΩ J 1/10W	R872	ERDS2TJ271TT	C 270 Ω J 1/4W
R710	ERJ6GEYJ104VT	T 100KΩ J 1/10W	R877	ERD25TJ271TT	C 270 Ω J 1/4W
R711	ERD25TJ122TT	C 1.2KΩ J 1/4W	R879	ERD25TJ102TT	C 1KΩ J 1/4W

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
R880	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W	R965	ERJ6GEYJ331VT	T 330 Ω J 1/10W
R881	ERJ6GEYJ102VT	T 1KΩ J 1/10W	R967	ERJ6GEYJ103VT	T 10KΩ J 1/10W
R882	ERDS1TJ120TT	C 12 Ω J 1/2W	R969	ERDS2TJ101TT	C 100 Ω J 1/4W
R883	ERDS2TJ104TT	C 100KΩ J 1/4W	R970	ERJ6GEYJ331VT	T 330 Ω J 1/10W
R885	ERX3SJ1R0PK	M 1 Ω J 3W	R972	ERDS2TJ471TT	C 470 Ω J 1/4W
R886	ERD25TJ332TT	C 3.3KΩ J 1/4W	R973	ERDS2TJ331TT	C 330 Ω J 1/4W
R887	ERJ6GEYJ102VT	T 1KΩ J 1/10W	R974	ERDS2TJ331TT	C 330 Ω J 1/4W
R888	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W	R976	ERD25TJ123TT	C 12KΩ J 1/4W
R889	ERJ6GEYJ392VT	T 3.9KΩ J 1/10W	R977	ERJ6GEYJ123VT	T 12KΩ J 1/10W
R891	ERX3SJ1R5PK	M 1.5 Ω J 3W	R981	ERDS2TJ101TT	C 100 Ω J 1/4W
R901	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W	R982	ERDS2TJ472TT	C 4.7KΩ J 1/4W
R902	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W	R983	ERDS2TJ273TT	C 27KΩ J 1/4W
R903	ERJ6GEYJ103VT	T 10KΩ J 1/10W	R984	ERDS2TJ103TT	C 10KΩ J 1/4W
R904	ERJ6GEYJ103VT	T 10KΩ J 1/10W			
R905	ERJ6GEYJ470VT	T 47 Ω J 1/10W			
R906	ERJ6GEYJ470VT	T 47 Ω J 1/10W			
R908	ERDS2TJ101TT	C 100 Ω J 1/4W			
R909	ERDS2TJ101TT	C 100 Ω J 1/4W			
R920	ERD25TJ102TT	C 1KΩ J 1/4W			
R922	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W			
R923	ERJ6GEYJ122VT	T 1.2KΩ J 1/10W		SPARK GAPS	
R924	ERJ6GEYJ122VT	T 1.2KΩ J 1/10W			
R925	ERD25TC0TT	C 0 Ω 1/4W	S301	TAGDSP201MT	SPARK GAP
R926	ERJ6GEYJ102VT	T 1KΩ J 1/10W	S321	TAGDSP201MT	SPARK GAP
R927	ERJ6GEYJ475VT	T 4.7MΩ J 1/10W	S341	TAGDSP201MT	SPARK GAP
R928	ERJ6GEYJ682VT	T 6.8KΩ J 1/10W	S391	TAGDSP201MT	SPARK GAP
R929	ERDS2TJ682TT	C 6.8KΩ J 1/4W	S392	TAGDSP201MT	SPARK GAP
R930	ERJ6GEY0R00VT	T 0 Ω 1/10W	S393	TGPS152GL	SPARK GAP
R932	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W			
R933	ERJ6GEYJ562VT	T 5.6KΩ J 1/10W			
R934	ERJ6GEY0R00VT	T 0 Ω 1/10W			
R935	ERJ6ENF5762VT	T 57.6KΩ F 1/10W			
R936	ERJ6GEYJ471VT	T 470 Ω J 1/10W		SWITCHS	
R938	ERJ6GEYJ102VT	T 1KΩ J 1/10W			
R939	ERJ6GEYJ103VT	T 10KΩ J 1/10W	△SW801	SDDFA3017U	POWER SW.(SDDF-3,5A/250V)
R941	ERJ6GEYJ102VT	T 1KΩ J 1/10W	SW901	EVQPB005K	SWITCH
R942	ERJ6GEYJ471VT	T 470 Ω J 1/10W	SW902	EVQPB005K	SWITCH
R943	ERD25TJ102TT	C 1KΩ J 1/4W	SW903	EVQPB005K	SWITCH
R944	ERJ6GEYJ100VT	T 10 Ω J 1/10W	SW904	EVQPB005K	SWITCH
R945	ERJ6GEYJ102VT	T 1KΩ J 1/10W			
R946	ERJ6GEYJ100VT	T 10 Ω J 1/10W			
R947	ERJ6GEYJ561VT	T 560 Ω J 1/10W			
R948	ERJ6GEYJ102VT	T 1KΩ J 1/10W			
R949	ERJ6GEYJ472VT	T 4.7KΩ J 1/10W		TRANSFORMERS	
R950	ERJ6GEYJ102VT	T 1KΩ J 1/10W			
R951	ERDS2TJ102TT	C 1KΩ J 1/4W	△T541	TLH4C65407Y	SWITCHING DRIVE TRANS.
R953	ERJ6GEYJ102VT	T 1KΩ J 1/10W	△T601	TLF4C64721M	FLYBACK TRANSFORMER
R954	ERJ6GEYJ102VT	T 1KΩ J 1/10W	△T801	TLP4C65234Y	SWITCHING TRANS.
R955	ERJ6ENF4221VT	T 4.22KΩ F 1/10W	△T881	TLP4C65135Y	CHOKE COIL
R956	ERJ6ENF2431VT	T 2.43KΩ F 1/10W			
R958	ERJ6GEYJ822VT	T 8.2KΩ J 1/10W			
R959	ERJ6GEYJ102VT	T 1KΩ J 1/10W			
R960	ERJ6GEYJ103VT	T 10KΩ J 1/10W			
R961	ERJ6GEYJ102VT	T 1KΩ J 1/10W			
R962	ERDS2TJ102TT	C 1KΩ J 1/4W			
R963	ERJ6GEYJ103VT	T 10KΩ J 1/10W			

REF. NO.	PART NO.	DESCRIPTION
	OTHERS	
△F801	XBA215T4.0AH	AC FUSE(T4AH/250V)
FG1	TJE4C0010	EARTH PLATE
FS801	TJC85502T	FUSE HOLDER
FS802	TJC85502T	FUSE HOLDER
J11-12	TXAJT1P6T1739	1P TERMINAL WIRE
J13A-B	TXAJT1PB1563	1P TERMINAL WIRE
J14A-B	TXAJT1PA1563	1P TERMINAL WIRE
J15A-B	TXAJT1P91563	1P TERMINAL WIRE
J16A-B	TXAJT1P61563	1P TERMINAL WIRE
J17A-B	TXAJT1PA1563	1P TERMINAL WIRE
J18A-B	TXAJT1PC1563	1P TERMINAL WIRE
J3	TXAJT1P71563	1P TERMINAL WIRE
J4	TXAJT1P81563	1P TERMINAL WIRE
△J891	251005-T52	SUBMINIATURE FUSE(5A)
△J892	251005-T52	SUBMINIATURE FUSE(5A)
J9-J10	TXAJT1P4T1435	1P TERMINAL WIRE
N105-1	TEL302-9	TERMINAL (GT PIN)
N105-2	TEL302-9	TERMINAL (GT PIN)
N105-3	TEL302-9	TERMINAL (GT PIN)
N105-4	TEL302-9	TERMINAL (GT PIN)
△N301	TJS4C6A501	CRT SOCKET
N302A	TXAJT7P11563	7P CONNECTOR
N302B	TJS878206	6P BASE
N303A	TXAJT9P11563	9P CONNECTOR
N303B	TJS878208	8P BASE
N304B	TJS878207	7P BASE
N305-1	TEL302-9	TERMINAL (GT PIN)
N305-2	TEL302-9	TERMINAL (GT PIN)
N306	TEL302-9	TERMINAL (GT PIN)
△N801	TJT4C6601T	AC INLET(SS-120,10A)
N803	TJS7551-03J	3P BASE
N804A	TXAJT4P11563	4P CONNECTOR
N901B	TJS878205	5P BASE
N903B	EMCS0451ML	4P BASE
△PC801	LTV-817B	PHOTO COUPLER LTV-81
VR551	EVNDCAA03B53	VR. 5KΩ B
VR801	EVNDCAA03B52	VR. 500 Ω B
X301	HC49U805	8.0MHZ OSC
X901	HC49U805	8.0MHZ OSC
	T8102012L1M2T	WIRE
	TMK4C0039	MICA SHEET
	TMM81416	WIRE CLAMPER
	TUC4C0100	HEAT SINK
	TUC4C0116-2	HEAT SINK
	TUC4C0117-3	HEAT SINK
	TUC4C0117-4	HEAT SINK
	TUC4C0118-2	CRT PCB SHIELD CASE
	TUC4C0119	HEAT SINK
	TUC4C0120	HEAT SINK
	TUC87574T	AC INLET METAL
	TUX4C0071	WIRE FIXING METAL
	TWE8202009ELT	1P TERMINAL WIRE
	TXAJT1P11563	1P TERMINAL WIRE
	TXAJT1PJ1563	1P TERMINAL WIRE

REF. NO.	PART NO.	DESCRIPTION
	XTB4+12A	SCREW
	XTV3+10C	SCREW
	XWG3F10	WASHER
	XWGT40660	WASHER

TCO PCB ASSEMBLY

	CAPACITORS	
C931	ECUV1C225ZFND	CC 2.2 uF Z 16V
C932	ECUV1H223KBNT	CC 0.022 uF K 50V
C933	TACCG102T200	CC 1000 pF 200V
C934	ECUV1H104ZFNT	CC 0.1 uF Z 50V
C935	ECUV1H102JCNT	CC 1000 pF J 50V
C936	TAC1022Z104H	CC 0.1 uF 1000V
	DIODES	
D931	MA153ATX	DIODE (CHIP)
D933	MA174TX	CHIP DIODE
	TRANSISTORS	
Q931	2SK1470TD	CHIP MOS
Q932	2SD602QRSTX	CHIP TRANSISTOR
Q933	2SC4080DETD	CHIP TRANSISTOR
Q934	2SC4080DETD	CHIP TRANSISTOR
Q935	2SA1575DETD	CHIP TRANSISTOR
	RESISTORS	
R931	ERJ6ENF1002VT	T 10KΩ F 1/10W
R932	ERJ6ENF4703VT	T 470KΩ F 1/10W
R933	ERJ6ENF1072VT	T 10.7KΩ F 1/10W
R934	ERJ6ENF3301VT	T 3.3KΩ F 1/10W
R935	ERJ1WYJ183HT	T 18KΩ J 1W
R936	ERJ6ENF2490VT	T 249 Ω F 1/10W
R937	ERJ6ENF3011VT	T 3.01KΩ F 1/10W
R939	ERJ6ENF4702VT	T 47KΩ F 1/10W
R940	ERJ6ENF4702VT	T 47KΩ F 1/10W
R941	ERJ6GEY0R00VT	T 0 Ω 1/10W
R942	ERJ6ENF4703VT	T 470KΩ F 1/10W
R943	ERJ6ENF4703VT	T 470KΩ F 1/10W
	OTHERS	
N901	TJEPI28G04M	CHIP 4P BASE
N902	TJEPI28G02M	CHIP 2P BASE
	TNP4C60041-9	PCB(150X12X1.6MM)
△	TNP4C60045-9	PCB(160X122.5X1.6MM)
△	TNP4C69044H9	PCB(246X327X1.6MM)

CONTENTS

SAFETY PRECAUTIONS

1. CAUTION

No modification of any circuit should be attempted. Service work should be performed only after you are throughly familiar with all of the following safety checks and servicing quidelines.

2. SAFETY CHECK

Care should be taken while servicing this CRT display because of the high voltage used in the deflection circuits. These voltages are exposed in such ares as the associated flyback and yoke circuits.

3. FIRE AND SHOCK HAZARD

3.1 Insert an isolation transformer between the CRT display and AC power line before servicing the chassis.

3.2 In servicing pay attention to original lead dress especially in the high voltage circuit. If a short circuit is found, replace all parts which have been overheated as result of the short circuit.

3.3 All the protective devices must be reinstalled per original design.

3.4 Soldering must be inspected for possible cold solder joints, frayed leads, damaged insulation, solder splashes or sharp solder points. Be certain to remove all foreign material.

4. LEAKAGE CURRENT COLD CHECK

4.1 Unplug the AC cord and connect a jumper between the two prongs on the plug.

4.4 Turn the CRT display power switch "on".

4.3 Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metallic part on the CRT display such as the metal frame, screwheads, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be 1.8 megohm minimum.

5. LEAKAGE CURRENT HOT CHECK

5.1 Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.

5.2 Connect a 1500 ohm, 10 watt resistor, paralled a 0.15 μ F capacitor between each exposed metallic part and a good earth ground (as shown in Fig 1).

5.3 Use an AC voltmeter with 1000 ohm/volt or more sensitivity and measure the AC voltage across the combination 1500 ohm resistor and 0.15 μ F capacitor.

5.4 Move the resistor connection to each exposed metallic part and measure the voltage.

5.5 Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.

5.6 Voltage measured must not exceed 7.5 volt RMS, from any exposed metallic part to ground. A leakage current tester may be used in the above hot check, in which case any current measured must not exceed 5.0 milliamps. In the case of a measurement exceeding the 5.0 milliamp value, a rework is required to eliminate the change of a shock hazard.

Note:

High voltage is present when this CRT display is operating. Always discharge the anode of the picture tube to the display chassis to prevent shock hazard.

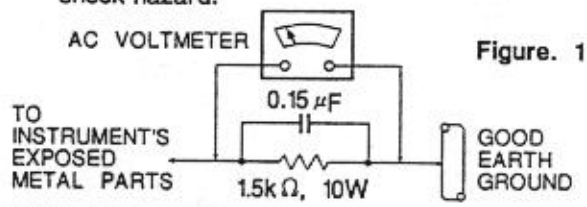


Figure. 1

6. IMPLOSION PROTECTION

All picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage and scratching during installation. Use only replacement picture tubes.

7. X-RADIATION

WARNING: The only potential source of X-Radiation is the picture tube. However when the high voltage circuitry is operating properly there is no possibility of X-Radiation problem. The basic precaution which must be exercised is to keep the high voltage at the following factory-recommended level.

Note: It is important to use an accurate periodically calibrated high voltage meter.

7.1 If cannot be adjusted 25.0 KV immediate service is required to prevent the possibility of premature component failure.

7.2 To prevent X-Radiation possibility it is essential to use the specified picture tube.

IMPORTANT SAFETY NOTICE

There are special components used in this CRT that are important for safety. These parts are identified by the international symbol ⚠ on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacture's specified parts to prevent X-RADIATION, shock, fire or other hazards. Do not modify the original design without written permission of the ViewSonic Corporation or this will void the original parts and labor guarantee.

⚠ WARNING

This service information is designed for experienced repair techniclans only and is not designed for use by the generat public.

It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional techniclans.

Any attempt to service or repair the product or products deait with in this service information by anyone else could result in serious injury or death.